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HEIGHT-ERROR ANALYSIS FOR THE FAA-AIR FORCE REPLACEMENT RADAR PROGRAM (FARR)

by

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AUGUST 1991

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13. Abstract: This report documents an evaluation of three methods for determining radar beam height at 40 proposed FAA and USAF radar stations. All three methods were compared to radiosonde observations (RAOBs), which are assumed to be ground truth, in order to determine height errors. The report concluded that climatology was superior to the triexponential model at 70 percent of the stations studied. Both climatology and the triexponential model were found to be superior to the standard atmosphere.
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PREFACE

This report documents work on USAFETAC Project 091203 for Electronic Systems Division/TCV, through Detachment 2, 2d Weather Squadron, Hanscom AFB, MA 01731-5000. The FAA/Air Force Radar Replacement Program is currently designed to use surface weather instrumentation and the triexponential model to determine radar beam refraction and height; based on earlier USAFETAC studies, the program director determined that the height specifications for the radar might not be met due to weather-induced errors in radar beam refraction. The results of this study were to be used in deciding on the most accurate and cost-effective method for determining radar beam height in the future. Project analyst was Michael F. Squires, USAFETAC/DNE.

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1. INTRODUCTION

1.1 Purpose. The purpose of this study was to determine the best method for specifying radar beam height error ("height error") at 40 proposed radar stations in the FAA-Air Force Replacement Radar (FARR) Program. "Height error" is the difference between an object's apparent altitude as shown on radar and its actual altitude.

1.2 The Physics of the Problem. As a radar beam propagates through the atmosphere, it does not follow a straight path, but is refracted or bent. The amount of refraction or bending depends on the atmosphere's three-dimensional refractivity gradient. Since most significant gradients of refractivity are in the vertical, the problem is generally treated two-dimensionally, with vertical refractivity profiles.

Atmospheric refractivity is a function of temperature, pressure, and water vapor. The amount of refraction must be calculated accurately in order for a radar to determine the actual height of a target. Most radar systems use a refractivity profile based on a standard atmosphere of typical temperature, pressure, and water vapor. One might think of the standard atmosphere as a climatology of the entire world, for all seasons and all times. However, since the actual and standard atmospheres are never the same, there is always some error in target heights computed with a standard atmosphere. The error is greater when the antenna is at low elevation angles (less than 2 degrees).

1.3 The Three Methods Studied. USAFETAC/DNE examined and compared the following three methods for determining height error:

The triexponential model. This method uses actual observations of surface temperature, pressure, and moisture at the radar station to generate an atmospheric profile. Since the amount of refraction in the lower atmosphere is proportional to observed surface refractivity, the triexponential model is an improvement over the standard atmosphere. However, the triexponential model is unable to correct for anomalous propagation caused by very unstable (subrefraction) or very stable conditions (superrefraction and ducting). The triexponential model can only generate a vertical profile of refractivity that decreases exponentially with height. Anomalous propagation is the result of strong deviations from this type of profile.

Site-Specific climatological refractivity profiles. This method uses station-specific climatological refractivity profiles that vary by month and hour. A major advantage is that it eliminates the need for costly weather equipment at the radar station. Climatological profiles are an improvement over the standard atmosphere because they are specific to location, season, and time of day.

The standard atmosphere. As mentioned, this is the least accurate method for determining radar height error.

The measure of merit in assessing the relative value of each of these methods was "height error," or the difference between heights derived by each of the three height-finding methods and the height derived from a radiosonde observation (RAOB) closest to the radar station (see 3.2 and equation 1). The height inferred by using RAOB data in a raytrace model is taken as "ground truth" for the purposes of this analysis. In fact, the "ground truth" itself contains errors caused by the fact that the nearest RAOB can, at times, be unrepresentative of propagation conditions along the radar beam.

TABLE 1. RADAR AND RAOB STATION COMPARISON. Elevations and transmitter heights are in meters; distances are in NM.

RADAR STATION (ELEV)	RAOB STATION (ELEV)	DISTANCE	XMTR HGT
1. Mill Valley, CA (808)	Oakland, CA (6)	21	802
2. FAA Aero Center, OK (unk)	Oklahoma City, OK (397)	4	8
3. Makah, WA (446)	Ouillayte, WA (62)	25	384
4. Oceana, VA (8)	Wallops Is, VA (3)	66	11
5. Lake Charles, LA (7)	Lake Charles, LA (10)	5	8
6. San Clemente, CA (599)	San Diego, CA (9)	65	600
7. Paso Robles, CA (1,000)	Vandenberg, CA (112)	41	1,000
8. Crescent City, CA (260)	Medford, OR (405)	72	1
9. Jedburb, SC (19)	Charleston, SC (15)	13	19
10. Mt Santa Rosa, Guam (262)	Anderson AFB, Guam (111)	4	151
11. Tyndall, FL (8)	Apalachicola, FL (6)	35	8
12. Salem, OR (1,140)	Salem, OR (61)	24	1,080
13. Gibbsboro, NJ (55)	Atlantic City, NJ (20)	28	35
14. Ellington, TX (13)	Lake Charles, LA (10)	106	8
15. Waterford City, ND (762)	Glasgow, MT (700)	118	62
16. Cross City, FL (19)	Apalachicola, FL (6)	105	19
17. Slidell, LA (8)	Boothville, LA (0)	64	8
18. Ft Fisher, NC (8)	Charleston, SC (15)	124	1
19. Bucks Harbor, ME (67)	Portland, ME (19)	138	48
20. El Paso, TX (1,225)	El Paso, TX (1,194)	12	31
21. Phoenix, AZ (1,598)	Winslow, AZ (1 988)	81	110
22. Richmond, FL (4)	West Palm Beach, FL (6)	65	8
23. Nashwank, MN (494)	International Falls, MN (361)	71	133
24. Lakeside, MT (2,085)	Great Falls, MT (1 115)	125	970
25. Mt Kaala, HI (1,225)	Lihue/Kauai, HI (45)	72	1,180
26. Sonora, TX (705)	Dei Rio, TX (313)	68	392
27. Whitehorse, FL (28)	Waycross, GA (46)	60	1
28. Riverhead, NY (78)	Atlantic City, NJ (20)	121	58
29. Silver City, NM (2,320)	Tucson, AZ (779)	112	1,541
30. Empire, MI (333)	Green Bay, WI (214)	90	119
31. Finley, ND (461)	Bismark, ND (506)	124	1
32. Utica, NY (547)	Albany, NY (89)	46	458
33. Mica Peak, WA (1,588)	Spokane, WA (721)	18	867
34. Mt Laguna, CA (1,890)	San Diego, CA (9)	38	1,890
35. Malmstrom, MT (1,068)	Great Falls, MT (1 115)	6	1
36. Patrick, FL (4)	West Palm Beach, FL (6)	95	8
37. Odessa, TX (951)	Midland, TX (872)	38	79
38. Ft Lonesome, FL (43)	Tampa, FL (13)	14	30
39. North Truro, MA (49)	Chatham, MA (16)	22	33
40. Oilton, TX (280)	Monterrey, MX (448)	119	1

2. DATA USED

2.1 RAOB Data. Table 1 (opposite) lists the 40 proposed FARR stations and the corresponding RAOB stations used in each analysis. Station elevations (meters MSL) and the distance (NM) between each radar and RAOB station are also given. Table 1 gives transmitter (antenna) height in meters above ground level (AGL) for each station used in raytrace model calculations (the heights in the raytrace model are also AGL). Antenna height for a given radar station depends on the difference between its elevation and that of the RAOB station.

- If the RAOB and radar are at or near the same elevation, an arbitrary antenna height of 8 meters is specified. Lake Charles, LA, is an example.
- If the radar station is *higher* than the RAOB station, antenna height is obtained by subtracting RAOB elevation from radar elevation. For example, antenna height for the Mill Valley, CA, radar is set to 802 meters (808-6=802). This makes physical sense because the RAOB at Oakland captures the marine boundary layer; the Mill Valley radar, however, is well above it.
- If the radar station is *lower* than the RAOB station, an antenna height of 1 meter is specified, and the raytrace model assumes the ground to be the station elevation of the RAOB. Elevations below this cannot be specified. The 1-meter antenna height is assigned to place the radar as low as possible.

The RAOB data used in the study was from USAFETAC's upper air-database (UA DATSAV). Data for each station included height, temperature, pressure, vapor pressure, and modified refractivity. Gross error checks were performed on all data. A 10-year period of record (POR) was used for each station. CLIMORAY, a raytrace model developed to meet the specific needs of this project, uses modified refractivity as an input; the other thermodynamic variables were needed for the triexponential model at the surface.

2.2 Climatological Profile Data. Climatological profiles were generated from the historical upper-air data. Each RAOB was interpolated to 30-meter increments from the surface to 5,000 meters and to 50-meter increments from 5,000 to 11,000 meters. The data was stratified by month and hour and median values of refractivity were calculated.

2.3 Triexponential Model Data. The triexponential model generates refractivity profiles based on the an exponential decrease of refractivity with height, as shown here:

$$N(h) = 77.6 \frac{P_o}{T_o} e^{\left(\frac{h}{H_d}\right)} + 3.75 \times 10^5 \left(\frac{E_o}{T_o^2}\right) e^{\left(\frac{h}{H_w}\right)} \quad (1)$$

Where

$N(h)$ = refractivity (N-Units) at height h (meters)	h = height of interest (m)
P_o = surface pressure (mb)	H_w = wet scale height (m)
T_o = surface temperature ($^{\circ}$ K)	H_d = dry scale height (m)
E_o = surface vapor pressure (mb)	

Westinghouse, the FARR contractor, specified a wet-scale height of 2.5 km. The dry-scale height is computed using surface temperature and moisture, assuming a tropopause height of 9 km, as specified by Westinghouse.

For this study, surface pressure, temperature, and moisture from each RAOB were used to generate a triexponentially modeled refractivity profile. Note that at the surface ($h=0$), the exponentials reduce to one; this expression becomes the standard equation for computing refractivity from weather data.

2.4 Standard Atmosphere. The 1962 U.S. Standard Atmosphere (as in Phillips Laboratory's RADTRAN model) was used to generate a "standard atmosphere refractivity profile." RADTRAN was chosen because it contains moisture data not in the U.S. Standard Atmosphere. Table 2 gives the refractivity profile (contained in data statements in CLIMORAY--see 3.1) for the standard atmosphere.

TABLE 2. STANDARD ATMOSPHERE REFRACTIVITY PROFILE.

Height (km)	M-Units	Height (km)	M-Units
0	330.4	16	2549.1
1	438.5	17	2700.1
2	557.3	18	2853.1
3	683.7	19	3006.2
4	816.2	20	3159.8
5	952.1	21	3313.9
6	1090.6	22	3468.4
7	1231.4	23	3623.3
8	1373.6	24	3778.5
9	1517.2	25	3933.9
10	1662.2	30	4714.1
11	1808.3	35	5496.9
12	1953.5	40	6280.9
13	2100.4	45	7065.4
14	2248.8	50	7850.2
15	2398.4		

3. METHOD

3.1 CLIMORAY. USAFETAC developed a raytrace model (CLIMORAY) to meet the specific needs of this study. After CLIMORAY had processed the entire 10-year POR of RAOB data, output was analyzed to produce statistics that show which method of specifying a refractivity profile is most useful.

To create CLIMORAY, the raytrace subroutine from the Naval Ocean Systems Center (NOSC) Laterally Heterogeneous Raytrace Model was converted from Quick-BASIC to FORTRAN and a FORTRAN driver was developed. CLIMORAY determines the height of the center of a radar beam at a specific range given an initial elevation angle and four types of atmospheres: RAOB, triexponential, climatology, and standard atmosphere. For this study, height error was computed at a range of 175 NM and an initial elevation angle of zero degrees.

3.2 Height Error. The height of the radar beam computed with RAOB data is assumed to be correct since it is based on actual observed data. Variability of the actual beam height associated with (1) resolution of the RAOB, and (2) horizontal homogeneity of the atmosphere, are not addressed in this report. Height errors derived from the three modeled atmospheres (triexponential, climatology, and standard atmosphere) were computed for each observation in the POR. "Height error" is defined as:

$$\text{HEIGHT ERROR} = (\text{HEIGHT DERIVED FROM MODEL}) - (\text{HEIGHT DERIVED FROM RAOB}) \quad (2)$$

If the model height is less than an observed height, the height error is negative. A negative height error implies that the radar-indicated height of the target is lower than its actual height. Large negative height errors are associated with subrefraction, which occurs with very unstable lapse rates. A positive height error implies that the target appears higher on radar than it really is. Large positive height errors are associated with superrefraction and ducting, which are characterized by very stable lapse rates and inversions. The root mean square error (RMSE) was also computed and is defined as:

$$\text{RMSE} = \sqrt{\frac{\sum (\text{Height Error})^2}{N}} \quad (3)$$

where N is the total number of observations.

4. RESULTS

A summary of RMS errors over the entire POR for each model for all of the proposed FARR sites is given in Table 3. A more detailed analysis of each station (including maximum and minimum error, distributions of error, and standard deviations) is given in the Appendix.

TABLE 3. RMS ERROR SUMMARY. All values are in meters.

Radar Station	Triexponential		Standard Atmosphere
	Model	Climatology	
1 Mill Valley, CA	1671	1614	1651
2 FAA Aeronautical Center, OK	1704	1665	1671
3 Makah, WA	1275	1239	1273
4 Oceana, VA	1875	1858	1941
5 Lake Charles, LA	1833	1822	1894
6 San Clemente, CA	2399	2361	2404
7 Paso Robles, CA	1306	1318	1308
8 Crescent City, CA	2406	2289	2303
9 Jeddburg, SC	1982	1973	2012
10 Mt Santa Rosa, Guam	629	626	950
11 Tyndall, FL	1882	1866	1892
12 Salem, OR	986	954	985
13 Gibbsboro, NJ	1604	1621	1677
14 Ellington, TX	1833	1822	1894
15 Waterford City, ND	1151	1151	1206
16 Cross City, FL	1894	1880	1919
17 Slidell, LA	1865	1812	1976
18 Ft Fisher, NC	2009	1994	2027
19 Bucks Harbor, ME	1067	1078	1130
20 El Paso, TX	1914	1863	1907
21 Phoenix, AZ	603	587	976
22 Richmond, FL	1391	1379	1384
23 Nashwauk, MN	928	916	1018
24 Lakeside, MT	206	233	596
25 Mt Kaala, HI	1418	1231	1617
26 Sonora, TX	915	952	1011
27 Whitehorse, FL	2074	2145	2091
28 Riverhead, NY	1543	1555	1631
29 Silver City, NM	390	403	531
30 Empire, MI	990	978	1057
31 Finley, ND	1805	1802	1773
32 Utica, NY	369	371	545
33 Mica Peak, WA	443	446	651
34 Mt Laguna, CA	792	787	793
35 Malmstrom, MT	2281	2053	2092
36 Patrick, FL	1397	1384	1388
37 Odessa, TX	1796	1774	1795
38 Ft Lonesome, FL	1804	1784	1872
39 North Truro, MA	1932	1894	1980
40 Oilton, TX	1949	1996	1969

Climatology had the lowest RMS error at 28 stations, the triexponential model had the lowest RMS error at 12, and the standard atmosphere has the lowest error at one. Climatology and triexponential tied at Waterford City, ND. Conversely, the standard atmosphere had the highest RMS error at 26 stations, triexponential at 11, and climatology at three.

At most stations, RMS errors for all three methods were similar; no matter what model is used to generate a refractivity profile, the result is an atmosphere in which refractivity decreases exponentially with height. Therefore, the vertical gradient of refractivity, which determines actual propagation, is similar for all three models. None of the models were able to specify anomalous propagation conditions. RAOB data can detect anomalous propagation conditions; therefore, large height errors can (and do) result from using modeled data.

5. CONCLUSIONS

The study compared the relative effectiveness of using the triexponential model, climatology, or the standard atmosphere to specify a refractivity profile for input to a raytrace model. The results of this study indicate that:

- RAOB data is the most effective (but most expensive) method for specifying refractivity profiles.
- Climatology is more effective than the triexponential model at most of the proposed FARR sites.
- In most cases, the difference between climatology and the triexponential model is small.
- Climatology and the triexponential model provide an improvement over the standard atmosphere in most cases.

Even though the triexponential model and climatology have similar RMS height error statistics, climatology requires no special weather equipment at the radar site and is relatively inexpensive.

APPENDIX

Radar Stations. The charts and tables in this appendix (Figures n-1 through n-9) provide a detailed analysis of height errors at each of the proposed FARR sites. The "n" in each figure number refers to the sequence number of the radar station as it is listed below.

- | | |
|------------------------|---------------------|
| 1. Mill Valley, CA | 21. Phoenix, AZ |
| 2. FAA Aero Center, OK | 22. Richmond, FL |
| 3. Makah, WA | 23. Nashwank, MN |
| 4. Oceana, VA | 24. Lakeside, MT |
| 5. Lake Charles, LA | 25. Mt Kaala, HI |
| 6. San Clemente, CA | 26. Sonora, TX |
| 7. Paso Robles, CA | 27. Whitehorse, FL |
| 8. Crescent City, CA | 28. Riverhead, NY |
| 9. Jeddburg, SC | 29. Silver City, NM |
| 10. Mt Santa Rosa, | 30. Empire, MI |
| 11. Tyndall, FL | 31. Finley, ND |
| 12. Salem, OR | 32. Utica, NY |
| 13. Gibbsboro, NJ | 33. Mica Peak, WA |
| 14. Ellington, TX | 34. Mt Laguna, CA |
| 15. Waterford City, ND | 35. Malmstrom, MT |
| 16. Cross City, FL | 36. Patrick, FL |
| 17. Slidell, LA | 37. Odessa, TX |
| 18. Ft Fisher, NC | 38. Ft Lonesome, FL |
| 19. Bucks Harbor, ME | 39. North Truro, MA |
| 20. El Paso, TX | 40. Oilton, TX |

Data Types. The numbers 1-9 after the "n" indicate the data provided for each station, as listed below.

1. RMS error table
2. Monthly RMS error chart
3. Monthly RMS errors by hour chart
4. Error statistics table
5. Error distribution table
6. Height error distribution chart
7. Triexponential model errors by month table
8. Climatology errors by month table
9. Height distribution chart

For Example, Figure 1-1 gives RMS errors for Mill Valley, CA, while Figure 3-5 gives triexponential model errors for Makah, WA. A description of each of the figures follows.

Figure n-1 RMS Error Tables for each model (triexponential, climatology, and standard atmosphere) are given in Figure n-1. RMS errors are given for the entire POR, by month, and by month and hour. Large RMS errors are associated with anomalous conditions such as subrefraction and ducting.

Figure n-2 Monthly RMS Error Charts. Plots of monthly RMS error for each model are given in Figure n-2. These charts are plots of monthly data from Figure n-1. Seasonal variations in height error can be inferred from this chart. In general, RMS errors for all three models are similar. The curve labeled "RMS Model Difference" represents RMS error differences between the triexponential model and the climatology for each RAOB tested. Although monthly RMS errors for climatology and the triexponential model are similar, the error between the two models on a case-by-case basis is large. This indicates that on any given day, the results from climatology and the triexponential model are different.

Figure n-3 Monthly RMS Errors by Hour Chart. Figure n-3 is similar to Figure n-2, except that the results are also stratified by hour; this chart, therefore, highlights diurnal variations in RMS error. Results are only displayed for climatology and the triexponential model.

Figure n-4 Error Statistics Table. As explained in Section 2 of this study, "error" is defined as the difference between the height of the radar beam computed by modeled data (triexponential, climatology, or standard atmosphere) and observed (RAOB) data. Positive errors result when the model generated height is higher than the RAOB-generated height, a condition that occurs with superrefraction and ducting. Negative errors result when the RAOB-generated height is higher than the model-generated height; this occurs with subrefraction. The mean, standard deviation, and extreme of height error for the entire POR for all three models (triexponential, climatology, and standard atmosphere) are given in Figure n-4. The mean error should be used with caution because of the large standard deviations in these tables.

Figure n-5 Error Distribution Table. The frequency and cumulative frequency distributions of height errors for the entire period for both models are shown in Figure n-5, plus the height-error distribution associated with the standard atmosphere. Height errors are grouped into 500-meter intervals. The midpoints of these intervals are given in the leftmost column. The negative height errors are due to subrefraction; targets would appear lower than they actually are. Positive errors are due to superrefraction and ducting; targets would appear higher than they actually are.

Figure n-6 Height-Error Distribution Chart. Figure n-6 is a histogram of the height-error distribution given in Figure n-5. Height errors are grouped into 1,000-meter intervals for each of the three models. The midpoints of these categories are labeled on the horizontal axis. It is desirable for a model to have a large count in the zero meter category. Some stations may have a lower RMS error for a particular model, but the same model may have more of its height-error distribution outside the zero meter category.

Figure n-7 Triexponential Monthly Error Distribution Table. Figure n-7 gives the percent distribution of height error by month for the triexponential model. As in Figure n-5, the height-error category is shown in the leftmost column. Columns to the right give monthly distributions. This table is useful for analyzing the monthly or seasonal variation of height error.

Figure n-8 Climatological Monthly Error Distribution Table. Figure n-8 is the same as Figure n-7, except that the information is for climatology.

Figure n-9 Height Distribution Chart. The distributions of heights for all four methods (RAOB, triexponential model, climatology, and the standard atmosphere) are displayed as a block chart in Figure n-9. The height is the altitude of the radar beam with a zero-degree elevation angle at a range of 175 nm. The horizontal axis is divided into 1,000-meter categories centered on the labeled value. The number at the base of each block indicates the number of times a height occurred within that category.

EXAMPLE: In Figure 1-9, the height of the radar beam based on RAOB data was 6,000 meters (+/- 500 meters) 717 times. The triexponential model predicted this height category two times, while climatology predicted it 654 times. The standard atmosphere never predicted this category. Since there is no monthly or hourly variation in the standard atmosphere, it only predicts one height. Therefore, its height distribution is always within one height category.

Figure n-9 explains why there are large RMS errors. Most stations have a bimodal distribution of heights associated with the RAOB data (but not the modeled data). The secondary maximum near 1,000 meters is due to ducting, which leads to large positive height errors, as well as to very large RMS errors. None of the models are able to adequately specify ducting. Figure n-9 also explains why there are similar RMS errors for all three models. Since the height distributions for all three models is similar, their RMS errors are also similar.

RMS ERRORS (meters) FOR
 Mill Valley, CA (OAK RAOB Data)
 Range=175 NM Angle=0 DEG

ENTIRE POR

TRIEXPONENTIAL	CLIMATOLOGY	STANDARD ATMOSPHERE
1671	1614	1651

RMS HEIGHT ERRORS FROM THE TRIEXPONENTIAL MODEL
 BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	1094	934	1235
FEB	1304	1228	1377
MAR	1222	1102	1329
APR	1366	1257	1467
MAY	1847	1646	2028
JUN	2285	2001	2534
JUL	2048	1883	2203
AUG	2301	1784	2714
SEP	1760	1340	2100
OCT	1720	1613	1822
NOV	1327	1356	1296
DEC	1129	1105	1152

RMS HEIGHT ERRORS FROM CLIMATOLOGY
 BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	1079	929	1211
FEB	1270	1197	1340
MAR	1209	1110	1299
APR	1341	1246	1429
MAY	1746	1566	1908
JUN	2153	1923	2359
JUL	1973	1832	2107
AUG	2163	1716	2526
SEP	1742	1341	2070
OCT	1707	1609	1802
NOV	1318	1354	1281
DEC	1124	1098	1150

Figure 1-1

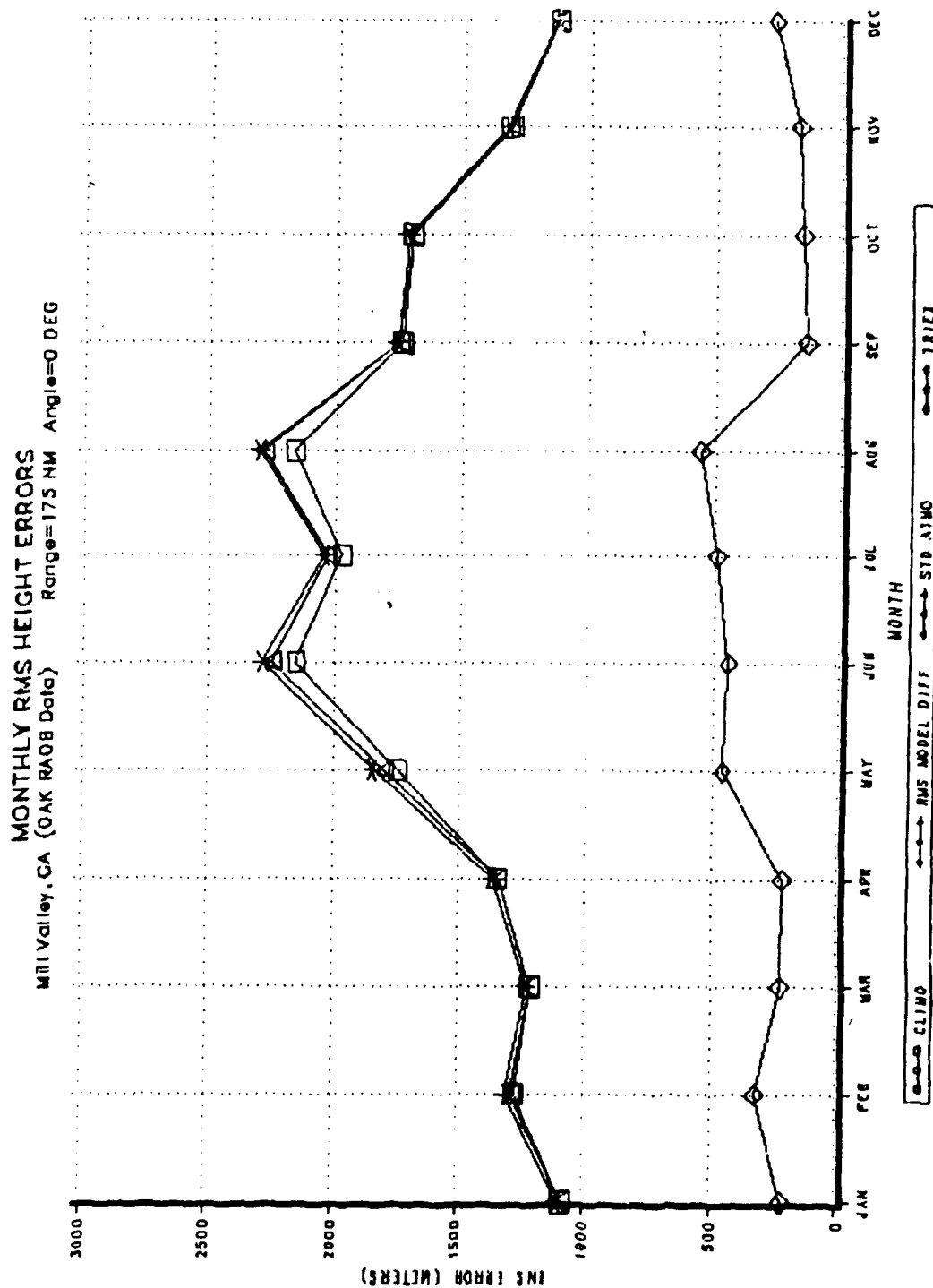


Figure 1-2

MONTHLY RMS HEIGHT ERRORS BY HOUR

Mill Valley, CA (OAK RADAR Data)
Range=175 NM Angle=0 DEG

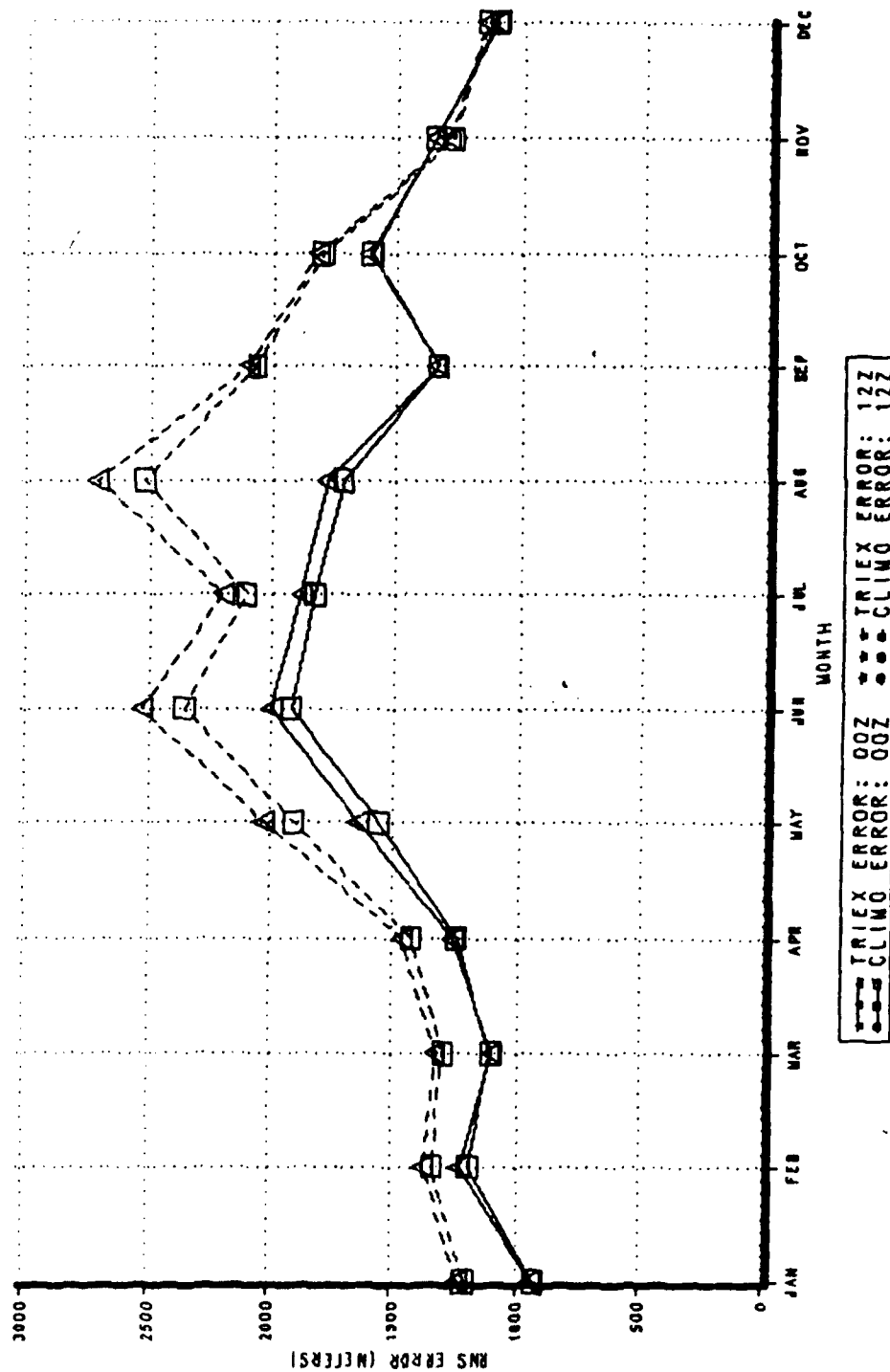


Figure 1-3

ERROR STATISTICS
 Mill Valley, CA (OAK RAOB Data)
 Range=175 NM Angle=0 DEG

MODEL	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
TRIEXPONENTIAL	471.94	1602.84	-2199.5	6704.9
CLIMATOLOGY	208.82	1600.83	-2663.5	6597.4
STANDARD ATMOSPHERE	327.62	1618.40	-2313.3	6673.6

Figure 1-4

TRIEXPONENTIAL MODEL ERRORS
 Mill Valley, CA (OAK RAOB Data)
 Range=175 NM Angle=0 DEG

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-2000	4	0.1	4	0.1
-1500	36	0.5	40	0.5
-1000	273	3.5	313	4.1
-500	1547	20.0	1860	24.1
0	3189	41.3	5049	65.4
500	1409	18.3	6458	83.7
1000	424	5.5	6882	89.2
1500	168	2.2	7050	91.3
2000	87	1.1	7137	92.5
2500	57	0.7	7194	93.2
3000	38	0.5	7232	93.7
3500	13	0.2	7245	93.9
4000	8	0.1	7253	94.0
4500	14	0.2	7267	94.1
5000	7	0.1	7274	94.2
5500	4	0.1	7278	94.3
6000	79	1.0	7357	95.3
6500	362	4.7	7719	100.0

CLIMATOLOGY ERRORS

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-2500	3	0.0	3	0.0
-2000	26	0.3	29	0.4
-1500	280	3.6	309	4.0
-1000	817	10.6	1126	14.6
-500	2227	28.9	3353	43.4
0	2540	32.9	5893	76.3
500	810	10.5	6703	86.8
1000	265	3.4	6968	90.3
1500	136	1.8	7104	92.0
2000	70	0.9	7174	92.9
2500	46	0.6	7220	93.5
3000	20	0.3	7240	93.8
3500	11	0.1	7251	93.9
4000	7	0.1	7258	94.0
4500	15	0.2	7273	94.2
5000	5	0.1	7278	94.3
5500	90	1.2	7368	95.5
6000	251	3.3	7619	98.7
6500	100	1.3	7719	100.0

Figure 1-5

HEIGHT ERROR DISTRIBUTION Mill Valley, CA (OAK RA08 Data) Range=175 NM Angle=0 DEG

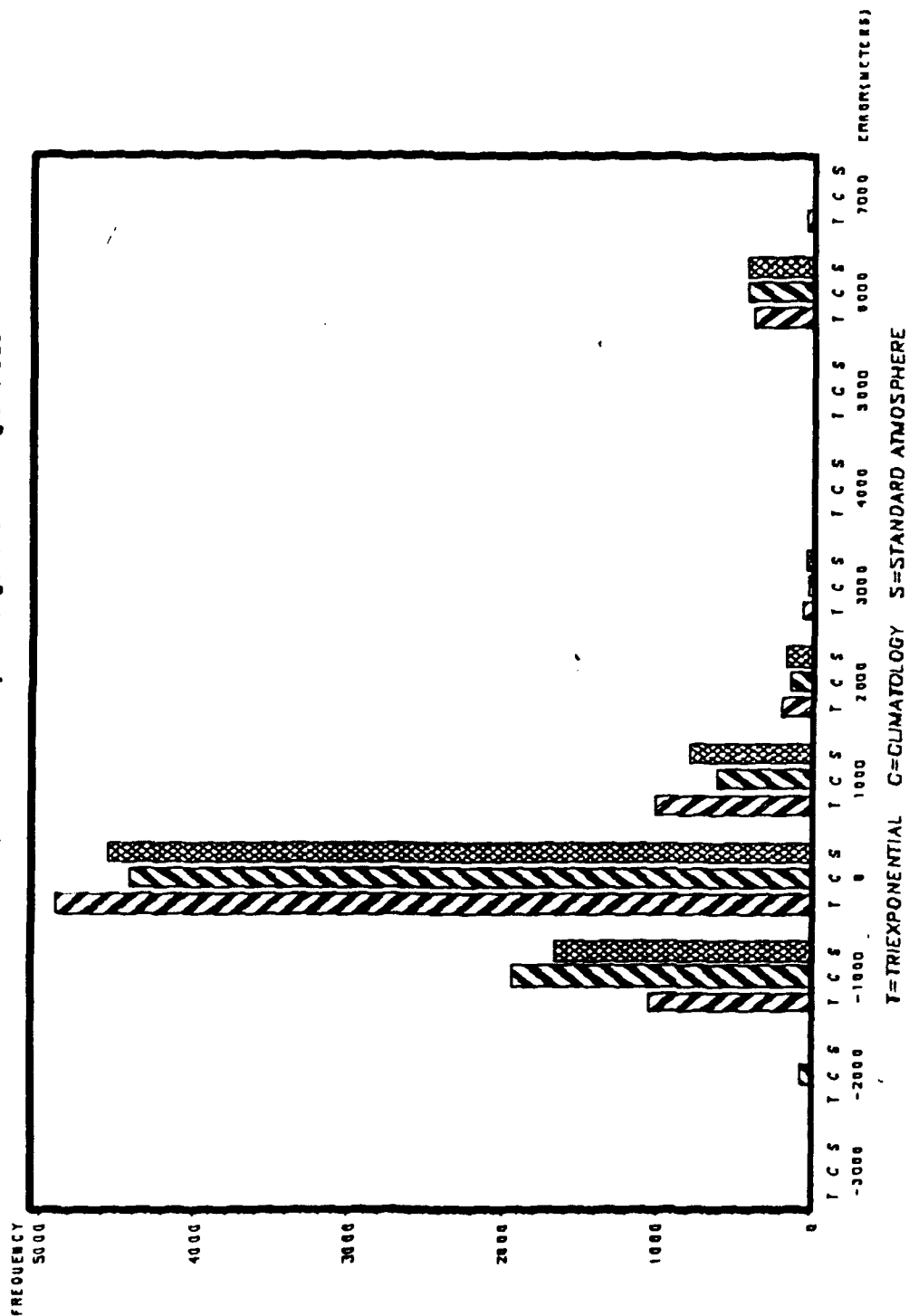


Figure 1-6

TRIEXPONENTIAL MODEL ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
-2000	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.31	0.00	0.00	0.00	0.00	
-1500	0.00	0.00	0.00	0.00	0.45	0.32	1.36	1.55	0.95	0.15	0.63	0.15	
-1000	0.61	1.51	1.21	2.07	2.73	3.94	8.18	7.89	7.31	3.82	1.74	1.36	
-500	15.30	14.74	10.62	20.06	20.91	22.08	30.30	26.47	25.12	25.38	13.77	15.45	
0	56.06	51.59	58.88	47.45	34.85	27.13	20.76	18.73	31.64	40.98	53.01	55.00	
500	19.85	18.93	18.36	19.27	19.09	19.24	18.33	19.81	14.79	14.98	18.04	18.33	
1000	2.88	5.86	4.55	3.34	7.73	7.73	5.45	6.35	8.11	4.28	5.54	4.24	
1500	0.76	2.18	1.97	1.43	2.73	3.63	2.58	3.10	2.38	1.99	1.58	1.82	
2000	0.91	0.84	1.06	1.43	1.82	1.58	1.36	1.08	0.79	0.92	0.79	0.91	
2500	0.45	0.50	0.00	0.64	1.21	1.10	0.91	1.08	1.59	0.76	0.63	0.00	
3000	0.76	0.00	0.15	0.32	0.91	0.79	0.76	1.08	0.48	0.00	0.47	0.15	
3500	0.00	0.17	0.00	0.16	0.15	0.32	0.15	0.62	0.16	0.15	0.16	0.00	
4000	0.00	0.00	0.00	0.00	0.15	0.32	0.30	0.00	0.16	0.15	0.16	0.00	
4500	0.30	0.50	0.15	0.16	0.00	0.32	0.45	0.31	0.00	0.00	0.00	0.00	
5000	0.00	0.00	0.00	0.00	0.45	0.16	0.15	0.15	0.16	0.00	0.00	0.00	
5500	0.00	0.00	0.00	0.00	0.00	0.16	0.15	0.31	0.00	0.00	0.00	0.00	
6000	0.00	0.00	0.15	0.00	0.61	1.89	2.12	3.25	2.38	1.22	0.63	0.00	
6500	2.12	3.18	2.88	3.66	6.21	9.31	6.36	7.89	3.97	5.20	2.85	2.58	
Total	660	597	659	628	660	634	660	646	629	654	632	660	7719

Figure 1-7

CLIMATOLOGY ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												Total
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
-2500	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.31	0.00	0.00	0.00	0.00	
-2000	0.00	0.00	0.00	0.00	0.15	0.32	1.82	1.70	0.00	0.00	0.00	0.00	
-1500	0.15	0.17	0.30	0.32	1.97	3.00	15.15	19.04	1.27	0.46	0.95	0.30	
-1000	2.58	9.88	3.19	6.05	20.30	21.14	20.00	15.48	13.67	6.42	2.37	5.91	
-500	33.03	36.01	29.59	32.96	34.39	23.50	20.15	15.48	24.32	32.87	25.79	38.18	
0	43.64	36.35	44.16	40.13	20.61	21.77	19.55	21.98	28.62	34.86	45.09	38.48	
500	13.94	7.54	14.26	11.15	6.97	9.94	6.67	6.97	14.15	11.77	13.61	8.94	
1000	1.67	3.85	2.43	1.75	3.64	3.63	3.33	2.63	6.04	3.52	4.91	3.94	
1500	1.06	1.51	1.97	1.91	2.12	2.21	2.12	1.39	2.38	1.83	1.90	0.76	
2000	0.30	0.34	0.76	0.96	1.36	1.10	0.61	2.01	0.79	1.38	0.47	0.76	
2500	0.61	0.50	0.00	0.64	0.76	0.95	0.76	0.77	1.43	0.15	0.63	0.00	
3000	0.61	0.17	0.15	0.16	0.30	0.16	0.15	0.31	0.32	0.00	0.63	0.15	
3500	0.00	0.00	0.00	0.16	0.15	0.47	0.15	0.15	0.48	0.15	0.00	0.00	
4000	0.00	0.00	0.00	0.00	0.00	0.16	0.61	0.00	0.00	0.15	0.16	0.00	
4500	0.30	0.50	0.15	0.16	0.45	0.32	0.00	0.46	0.00	0.00	0.00	0.00	
5000	0.00	0.00	0.00	0.00	0.00	0.16	0.30	0.15	0.16	0.00	0.00	0.00	
5500	0.00	0.00	0.00	0.00	0.61	1.58	4.24	7.28	0.00	0.15	0.00	0.00	
6000	1.36	2.68	1.52	1.43	6.21	9.62	4.09	3.87	3.97	1.68	1.11	1.52	
6500	0.76	0.50	1.52	2.23	0.00	0.00	0.15	0.00	2.38	4.59	2.37	1.06	
Total	660	597	659	628	660	634	660	646	629	654	632	660	7719

Figure 1-8

Mill Valley, CA (OAK RAOB Data) Range=175 NM Angle=0 DEG

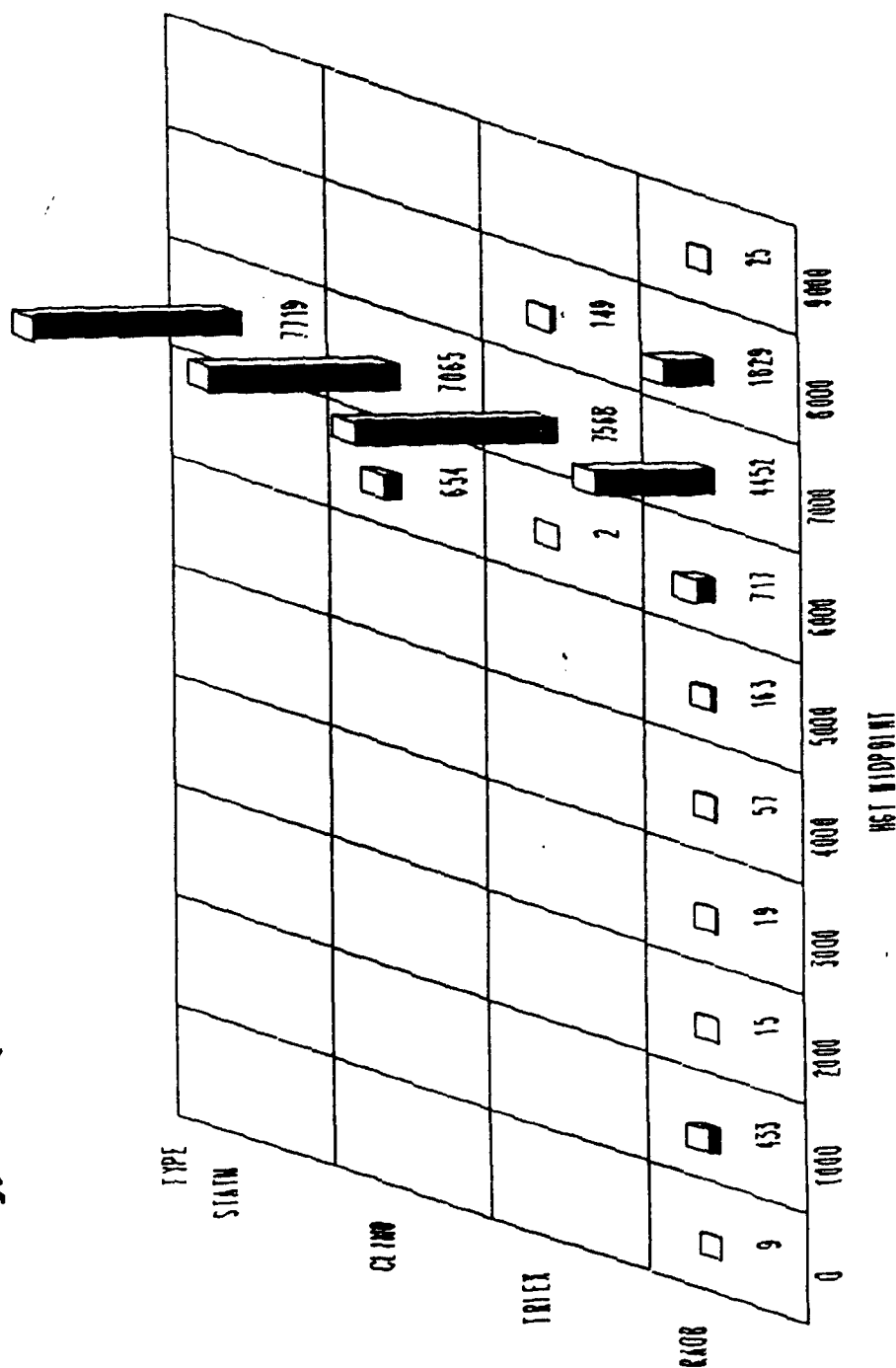


Figure 1-9

RMS ERRORS (meters) FOR
 FAA Aero Ctr, OK (OKC RAOB Data)
 Range=175 NM Angle=0 DEG

ENTIRE POR

TRIEXPONENTIAL	CLIMATOLOGY	STANDARD ATMOSPHERE
1704	1665	1671

RMS HEIGHT ERRORS FROM THE TRIEXPONENTIAL MODEL
 BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	1770	1398	2078
FEB	1746	1397	2038
MAR	1792	958	2347
APR	1704	1200	2091
MAY	1393	848	1776
JUN	1287	1000	1520
JUL	1154	1084	1219
AUG	1188	1029	1328
SEP	1279	1113	1427
OCT	1890	1271	2355
NOV	2277	1641	2769
DEC	2421	1867	2869

RMS HEIGHT ERRORS FROM CLIMATOLOGY
 BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	1724	1422	1983
FEB	1734	1424	1997
MAR	1731	985	2241
APR	1653	1264	1968
MAY	1382	865	1751
JUN	1334	973	1617
JUL	1169	1071	1260
AUG	1138	814	1388
SEP	1285	1090	1454
OCT	1838	1339	2230
NOV	2205	1691	2618
DEC	2322	1876	2695

Figure 2-1

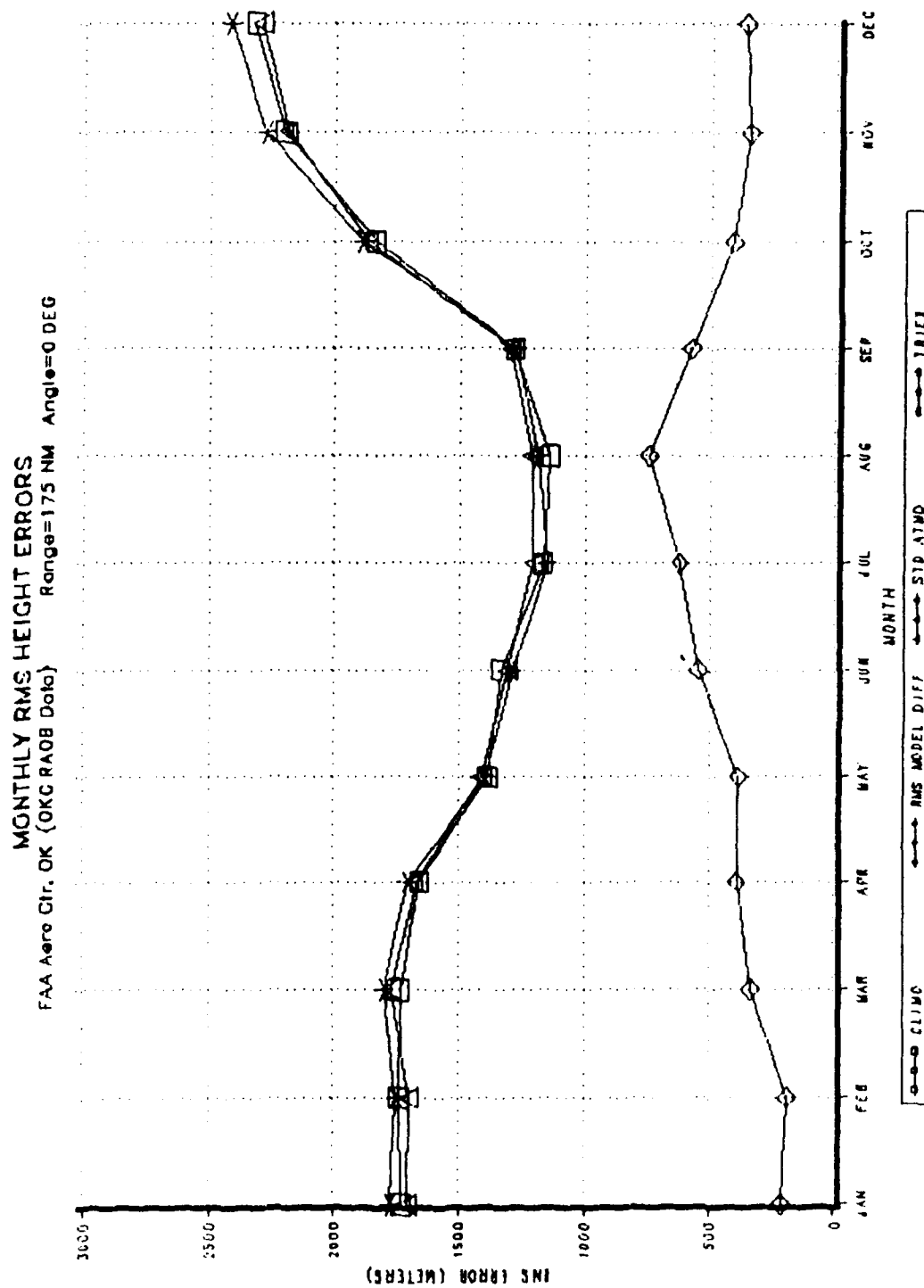


Figure 2-2

MONTHLY RMS HEIGHT ERRORS BY HOUR

FAA Aero Cir, OK (OKC RA08 0010)
 Range=175 NM Angle=0 DEG

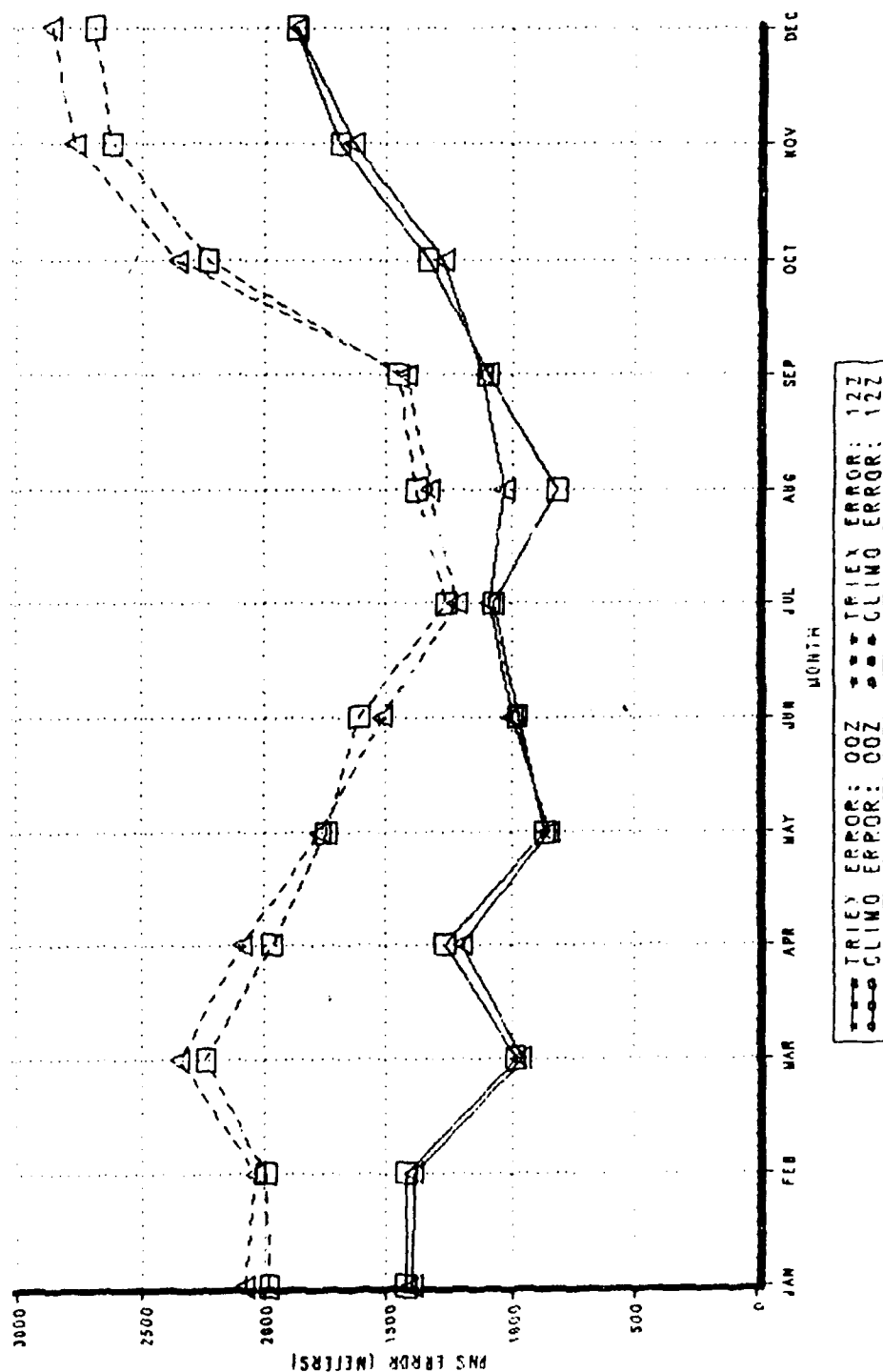


Figure 2-3

ERROR STATISTICS
 FAA Aero Ctr, OK (OKC RAOB Data)
 Range=175 NM Angle=0 DEG

MODEL	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
TRIEXPONENTIAL	233.58	1687.78	-2708.1	6687.4
CLIMATOLOGY	372.47	1623.18	-3479.9	6733.0
STANDARD ATMOSPHERE	50.74	1670.48	-3666.3	5970.7

Figure 2-4

TRIEXPONENTIAL MODEL ERRORS
 FAA Aero Ctr, OK (OKC RAOB Data)
 Range=175 NM Angle=0 DEG

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-2500	7	0.1	7	0.1
-2000	44	0.6	51	0.6
-1500	172	2.2	223	2.8
-1000	757	9.5	980	12.4
-500	2681	33.8	3661	46.2
0	2457	31.0	6118	77.2
500	732	9.2	6850	86.4
1000	276	3.5	7126	89.9
1500	145	1.8	7271	91.7
2000	77	1.0	7348	92.7
2500	38	0.5	7386	93.2
3000	19	0.2	7405	93.4
3500	14	0.2	7419	93.6
4000	7	0.1	7426	93.7
500	7	0.1	7433	93.7
5000	18	0.2	7451	94.0
5500	52	0.7	7503	94.6
6000	101	1.3	7604	95.9
6500	325	4.1	7929	100.0

CLIMATOLOGY ERRORS

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-3500	2	0.0	2	0.0
-3000	2	0.0	4	0.1
-2000	15	0.2	19	0.2
-1500	77	1.0	96	1.2
-1000	460	5.8	556	7.0
-500	2112	26.6	2668	33.6
0	2947	37.2	5615	70.8
500	1133	14.3	6748	85.1
1000	369	4.7	7117	89.8
1500	160	2.0	7277	91.8
2000	61	0.8	7338	92.5
2500	41	0.5	7379	93.1
3000	23	0.3	7402	93.4
3500	13	0.2	7415	93.5
4000	7	0.1	7422	93.6
4500	10	0.1	7432	93.7
5000	10	0.1	7442	93.9
5500	13	0.2	7455	94.0
6000	326	4.1	7781	98.1
6500	148	1.9	7929	100.0

Figure 2-5

HEIGHT ERROR DISTRIBUTION FAA Aero Cir. OK (OKC RADB Data) Range=175 NM Angle=0 DEG

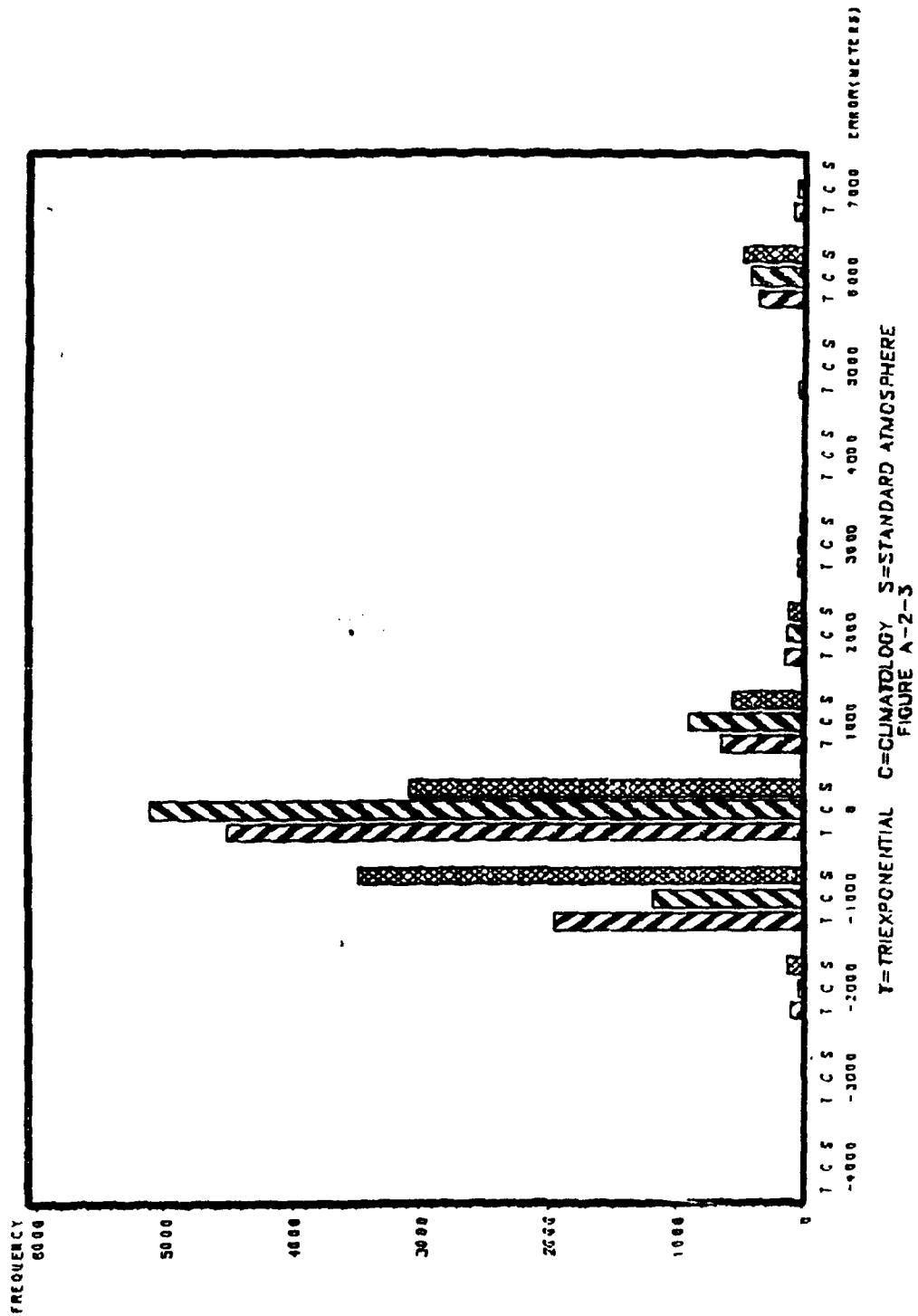


Figure 2-6

TRIEXPONENTIAL MODEL ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
-2500	0.00	0.00	0.15	0.00	0.00	0.15	0.00	0.74	0.00	0.00	0.00	0.00	
-2000	0.00	0.00	0.00	0.00	0.30	1.38	0.89	2.97	0.77	0.15	0.15	0.00	
-1500	0.00	0.16	0.30	0.46	1.19	4.31	4.58	9.05	3.99	1.19	0.46	0.15	
-1000	1.18	0.98	4.01	3.52	7.59	17.38	22.45	25.22	18.56	9.20	2.15	1.51	
-500	14.64	21.73	32.34	38.99	47.62	41.38	43.72	37.09	46.93	41.84	24.12	14.48	
0	54.59	50.16	40.50	30.28	22.02	18.92	15.66	13.80	13.34	25.37	42.24	46.30	
500	14.64	13.07	9.79	9.48	8.93	4.77	5.02	5.64	7.36	6.53	11.06	14.78	
1000	3.70	3.76	2.82	5.35	4.61	2.92	2.81	2.08	2.45	3.71	3.23	4.37	
1500	2.22	1.63	1.78	2.91	1.49	2.77	0.89	0.45	1.07	1.48	2.76	2.56	
2000	0.89	1.14	0.45	1.07	0.60	1.69	1.03	0.45	1.38	0.74	0.61	1.66	
2500	0.59	0.33	0.30	0.76	0.74	0.62	0.15	0.15	0.46	0.89	0.46	0.30	
3000	0.59	0.16	0.15	0.31	0.30	0.15	0.30	0.15	0.15	0.45	0.15	0.00	
3500	0.15	0.00	0.15	0.31	0.00	0.46	0.15	0.15	0.46	0.15	0.15	0.00	
4000	0.15	0.00	0.00	0.15	0.30	0.31	0.00	0.00	0.00	0.00	0.15	0.00	
4500	0.00	0.16	0.00	0.00	0.30	0.00	0.00	0.15	0.15	0.15	0.00	0.15	
5000	0.00	0.00	0.30	0.46	0.30	0.46	0.44	0.30	0.15	0.30	0.00	0.00	
5500	0.00	0.00	0.30	0.15	1.04	1.08	1.62	1.34	0.77	0.45	0.61	0.45	
6000	0.00	0.33	0.00	2.14	2.08	1.08	0.30	0.15	1.69	2.52	3.07	1.96	
6500	6.66	6.37	6.68	3.67	0.60	0.15	0.00	0.15	0.31	4.90	8.60	11.31	
Total	676	612	674	654	672	650	677	674	652	674	651	663	7929

Figure 2-7

CLIMATOLOGY ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												Total
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
-3500	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.15	0.00	0.00	0.00	0.00	
-3000	0.00	0.00	0.15	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
-2000	0.00	0.00	0.00	0.15	0.00	0.00	0.15	1.04	0.31	0.15	0.31	0.15	
-1500	0.00	0.16	0.59	0.76	0.60	1.38	1.48	1.78	0.77	1.93	1.23	0.90	
-1000	2.37	1.31	5.64	6.12	6.99	4.92	9.16	7.86	4.91	8.75	5.53	5.58	
-500	27.81	28.43	22.40	29.66	30.36	23.38	19.79	17.95	19.94	30.12	32.10	38.01	
0	46.75	44.28	48.81	34.56	34.67	32.92	36.63	31.31	42.64	32.94	33.18	27.60	
500	10.21	12.75	9.35	13.91	14.14	20.15	20.53	23.59	17.02	10.98	9.83	8.90	
1000	2.66	3.27	3.71	4.43	4.46	5.69	6.35	9.79	5.83	3.86	2.92	2.71	
1500	1.63	1.47	1.34	1.99	2.38	4.00	1.18	2.97	2.91	1.48	1.54	1.36	
2000	0.89	0.98	0.30	0.46	0.89	1.54	0.89	0.30	0.77	0.74	0.61	0.90	
2500	0.74	0.33	0.15	0.76	0.30	1.54	0.59	0.45	0.77	0.59	0.00	0.00	
3000	0.15	0.16	0.15	0.46	0.30	0.62	0.44	0.30	0.46	0.15	0.31	0.00	
3500	0.00	0.00	0.15	0.31	0.15	0.15	0.30	0.30	0.46	0.00	0.15	0.00	
4000	0.15	0.00	0.00	0.00	0.15	0.31	0.15	0.00	0.15	0.15	0.00	0.00	
4500	0.00	0.00	0.15	0.15	0.30	0.31	0.00	0.30	0.15	0.00	0.00	0.15	
5000	0.00	0.16	0.15	0.15	0.30	0.00	0.00	0.00	0.00	0.30	0.15	0.30	
5500	0.00	0.00	0.30	0.61	0.15	0.00	0.30	0.15	0.00	0.15	0.15	0.15	
6000	4.44	0.00	5.79	3.98	3.27	2.92	1.18	1.63	1.99	5.93	8.76	9.20	
6500	2.22	6.70	0.89	1.53	0.45	0.00	0.89	0.15	0.92	1.78	3.23	4.07	
Total	676	612	674	654	672	650	677	674	652	674	651	663	7929

Figure 2-8

HEIGHT DISTRIBUTION

FAA Aero Ctr, OK (OKC RAOB Data) Range = 175 NM Angle = 0 DEG

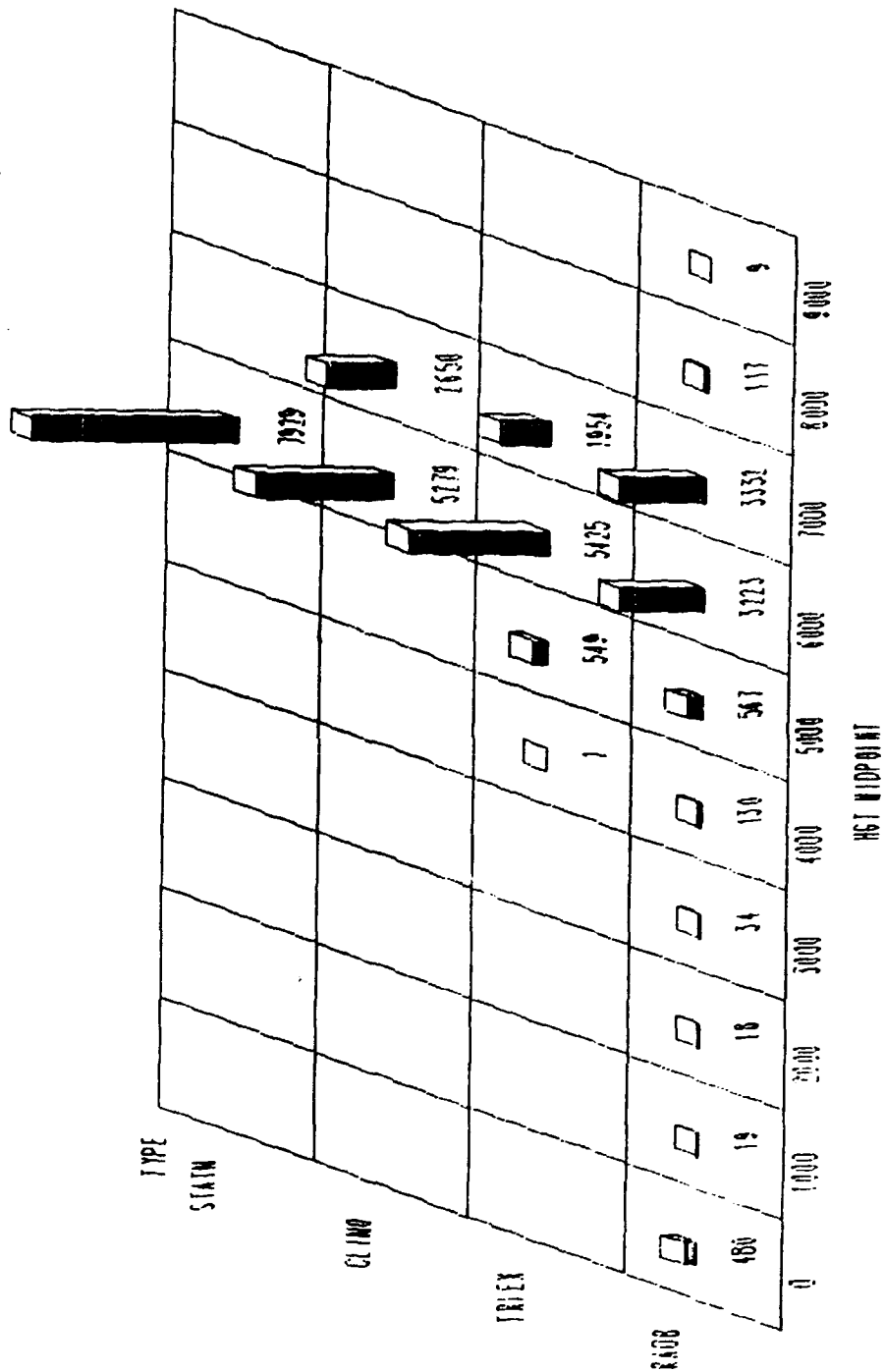


Figure 2-9

RMS ERRORS (meters) FOR
 Makah, WA (UIL RAOB Data)
 Range=175 NM Angle=0 DEG

ENTIRE FOR

TRIEXPONENTIAL	CLIMATOLOGY	STANDARD ATMOSPHERE
1275	1239	1273

RMS HEIGHT ERRORS FROM THE TRIEXPONENTIAL MODEL
 BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	629	732	501
FEB	542	447	623
MAR	594	478	691
APR	1057	920	1177
MAY	1192	696	1526
JUN	1735	1454	1978
JUL	1885	1457	2240
AUG	2239	1826	2587
SEP	1245	1194	1294
OCT	1454	1461	1448
NOV	546	470	615
DEC	476	564	369

RMS HEIGHT ERRORS FROM CLIMATOLOGY
 BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	634	736	508
FEB	554	467	630
MAR	613	511	700
APR	1073	960	1173
MAY	1187	735	1501
JUN	1694	1457	1903
JUL	1833	1462	2147
AUG	2080	1745	2368
SEP	1226	1200	1251
OCT	1424	1454	1392
NOV	562	494	623
DEC	485	576	374

Figure 3-1

MONTHLY RMS HEIGHT ERRORS
 Makoh, WA (UIL RADOB Data) Range=175 NM Angle=0 DEG

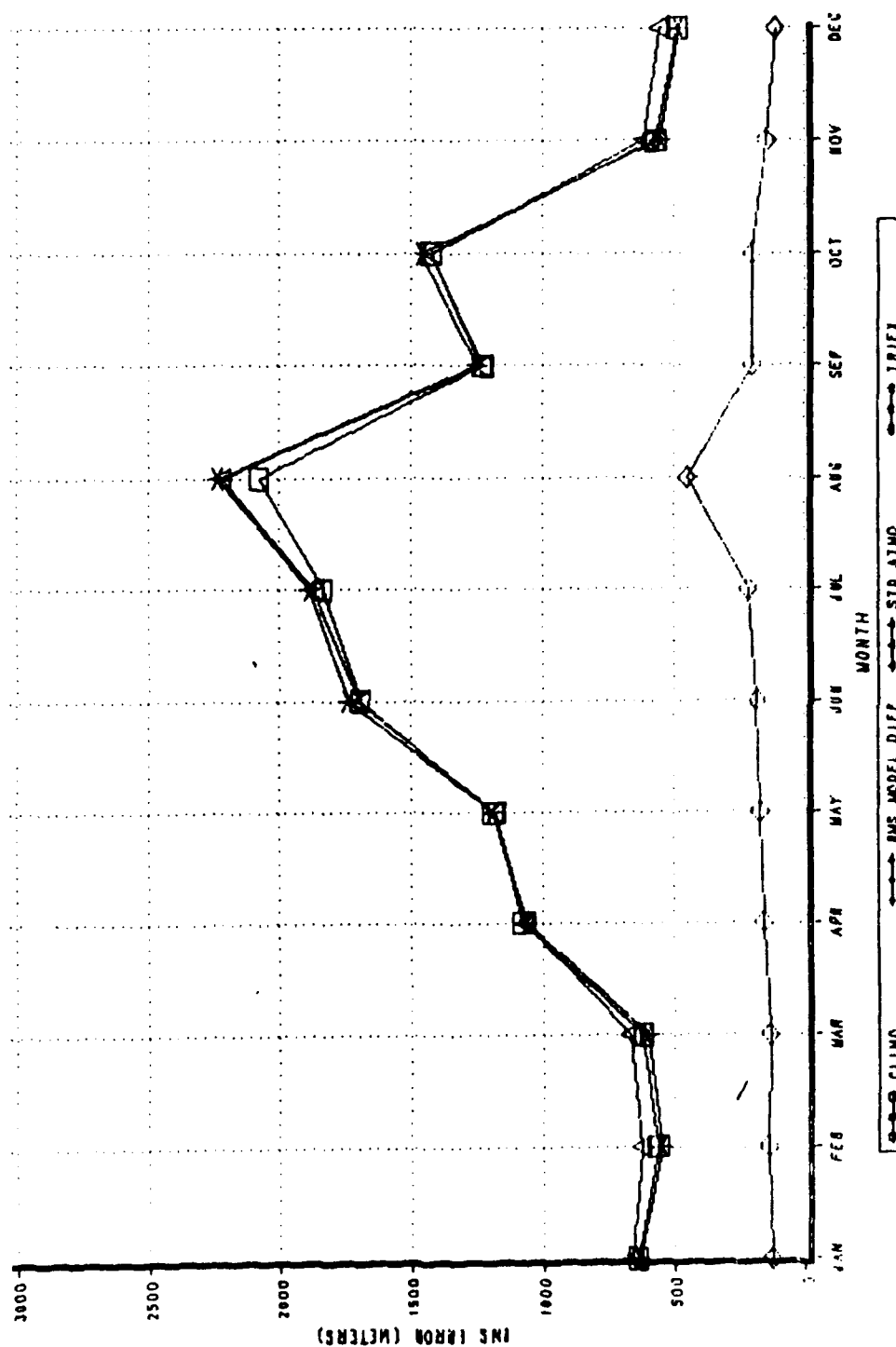


Figure 3-2

MONTHLY RMS HEIGHT ERRORS BY HOUR

Makoh, WA (UUL RAOB Data)
Range=173 NM Angle=0 DEG

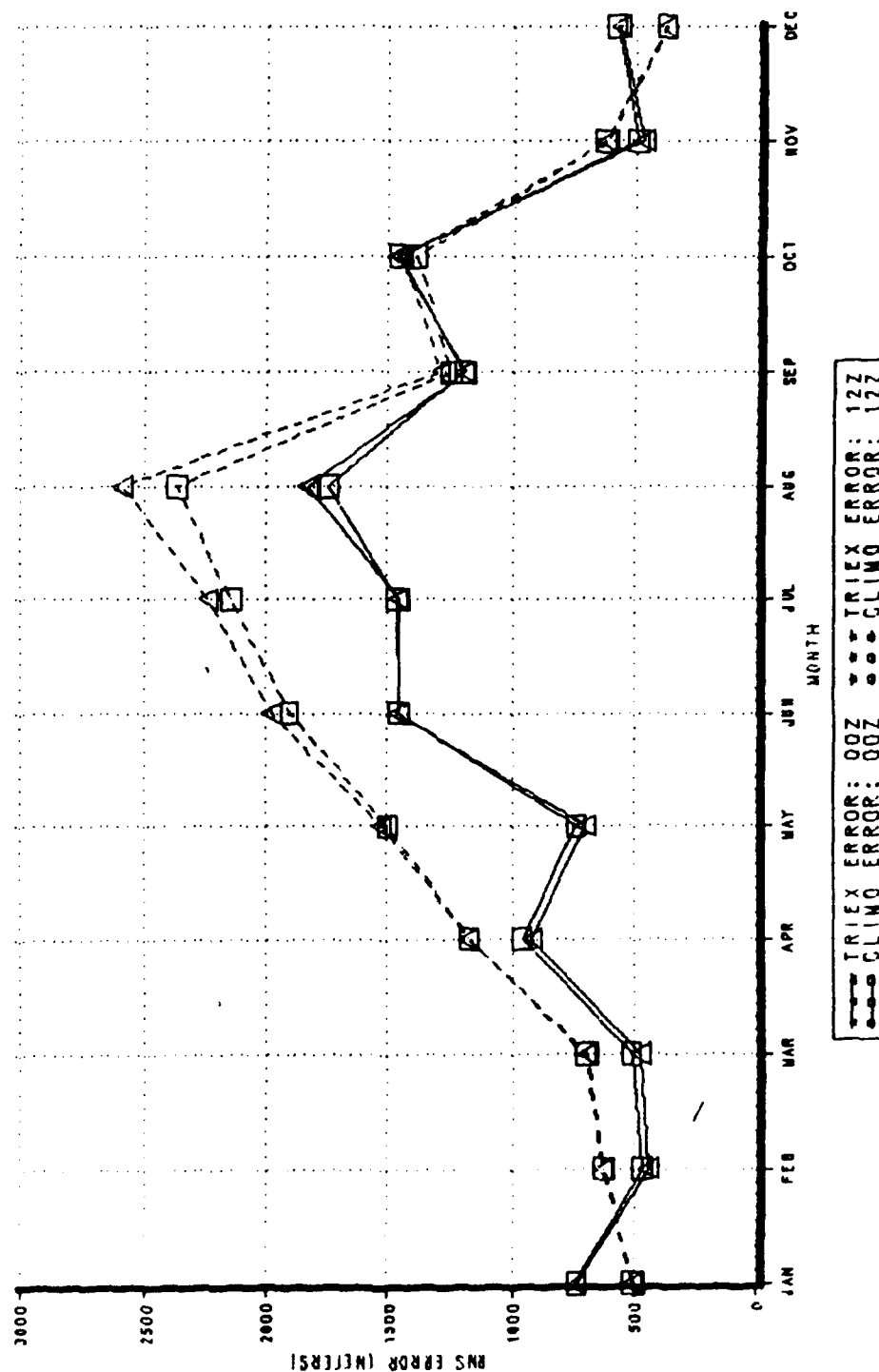


Figure 3-3

ERROR STATISTICS
Makah, WA (UIL RAOB Data)
Range=175 NM Angle=0 DEG

MODEL	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
TRIEXPONENTIAL	307.30	1237.55	-1753.6	6512.3
CLIMATOLOGY	255.00	1212.59	-2080.3	6542.2
STANDARD ATMOSPHERE	105.30	1269.17	-2074.9	6378.3

Figure 3-4

TRIEXPONENTIAL MODEL ERRORS
Makah, WA (UIL RAOB Data)
Range=175 NM Angle=0 DEG

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-2000	1	0.0	1	0.0
-1500	8	0.1	9	0.1
-1000	33	0.4	42	0.5
-500	934	12.1	976	12.7
0	4933	63.9	5909	76.6
500	959	12.4	6868	89.0
1000	301	3.9	7169	92.9
1500	146	1.9	7315	94.8
2000	48	0.6	7363	95.4
2500	33	0.4	7396	95.9
3000	20	0.3	7416	96.1
3500	3	0.0	7419	96.2
4000	9	0.1	7428	96.3
4500	5	0.1	7433	96.4
5000	2	0.0	7435	96.4
5500	4	0.1	7439	96.4
6000	197	2.6	7636	99.0
6500	78	1.0	7714	100.0

CLIMATOLOGY ERRORS

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-2000	4	0.1	4	0.1
-1500	12	0.2	16	0.2
-1000	107	1.4	123	1.6
-500	1469	19.0	1592	20.6
0	4427	57.4	6019	78.0
500	931	12.1	6950	90.1
1000	263	3.4	7213	93.5
1500	115	1.5	7328	95.0
2000	41	0.5	7369	95.5
2500	35	0.5	7404	96.0
3000	13	0.2	7417	96.1
3500	3	0.0	7420	96.2
4000	7	0.1	7427	96.3
4500	7	0.1	7434	96.4
5000	2	0.0	7436	96.4
5500	66	0.9	7502	97.3
6000	176	2.3	7678	99.5
6500	36	0.5	7714	100.0

Figure 3-5

HEIGHT ERROR DISTRIBUTION Makoh, WA (JIL RAOB Data) Range=175 NM Angle=0 DEG

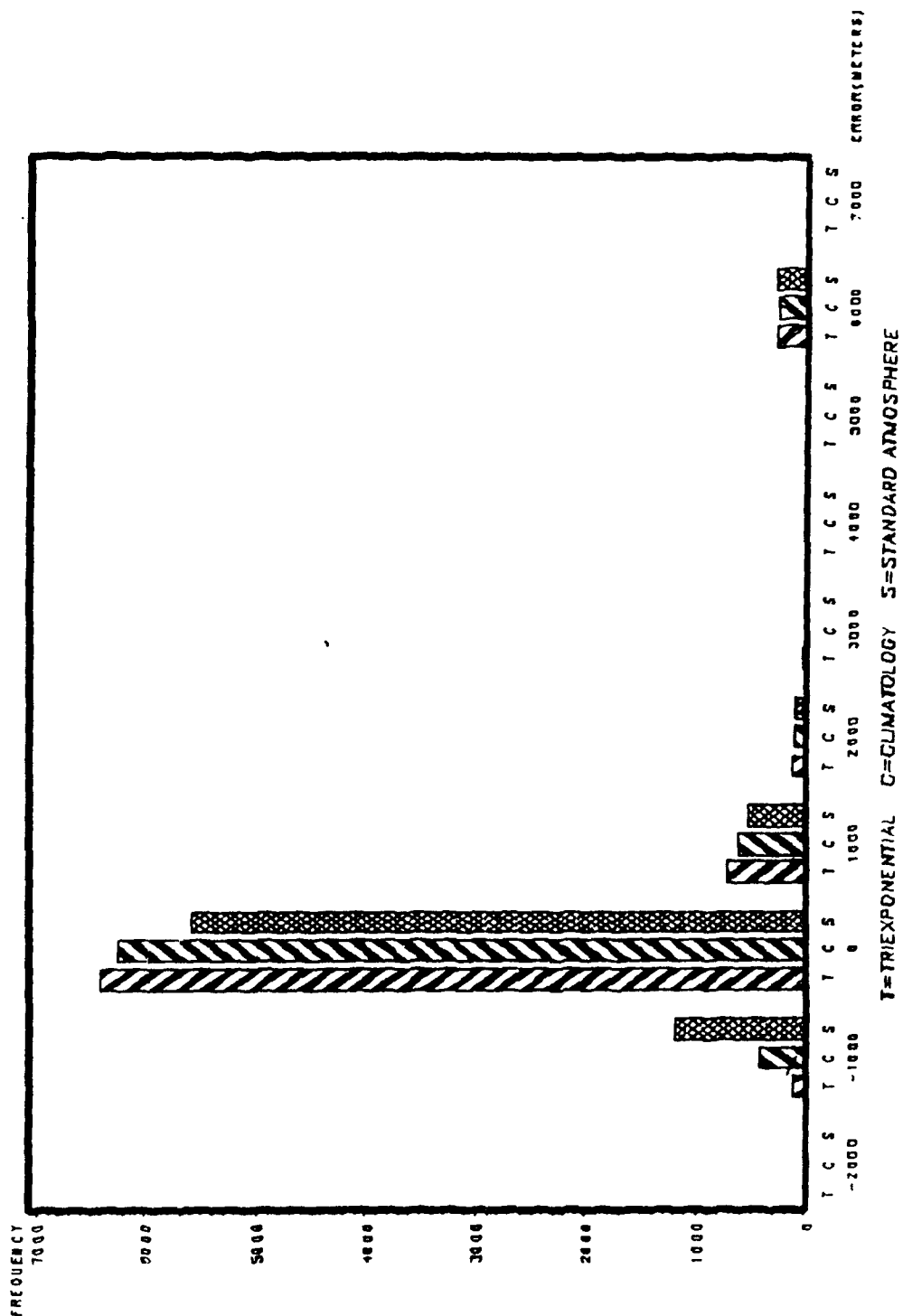


Figure 3-6

TRIEXPONENTIAL MODEL ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
-2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	
-1500	0.00	0.00	0.00	0.00	0.45	0.00	0.31	0.15	0.00	0.00	0.00	0.31	
-1000	0.15	0.34	0.00	0.16	0.30	0.16	0.61	0.76	1.26	0.61	0.47	0.31	
-500	11.20	11.53	11.16	13.84	14.24	12.52	13.00	10.50	12.26	11.62	11.62	11.67	
0	71.80	77.45	77.68	70.13	65.07	52.77	51.07	41.25	54.40	55.96	77.08	74.19	
500	11.89	0.09	7.95	9.12	11.54	16.16	15.14	20.40	17.45	14.22	7.54	9.22	
1000	2.44	1.20	1.22	2.36	3.15	5.23	5.20	8.37	6.29	7.49	1.10	2.46	
1500	1.07	0.69	0.76	1.10	0.75	3.96	2.60	3.35	2.99	3.52	1.10	0.77	
2000	0.46	0.00	0.31	0.31	1.05	0.48	1.22	1.07	0.79	1.07	0.63	0.00	
2500	0.15	0.17	0.15	0.31	0.00	0.95	1.22	0.76	0.94	0.15	0.00	0.31	
3000	0.00	0.00	0.15	0.00	0.15	0.48	0.76	0.76	0.00	0.46	0.00	0.31	
3500	0.00	0.00	0.00	0.00	0.15	0.16	0.15	0.00	0.00	0.00	0.00	0.00	
4000	0.15	0.00	0.00	0.16	0.00	0.16	0.31	0.15	0.00	0.31	0.00	0.15	
4500	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.15	0.31	0.15	0.00	0.00	
5000	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.16	0.00	0.00	0.00	
5500	0.00	0.00	0.00	0.31	0.00	0.00	0.00	0.15	0.16	0.00	0.00	0.00	
6000	0.15	0.00	0.31	0.63	1.50	4.75	7.03	10.96	2.20	2.60	0.16	0.00	
6500	0.46	0.52	0.31	1.57	1.65	2.06	1.22	1.22	0.79	1.83	0.31	0.15	
Total	656	581	654	636	667	631	654	657	636	654	637	651	7714

Figure 3-7

CLIMATOLOGY ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
-2000	0.00	0.00	0.00	0.00	0.15	0.00	0.15	0.15	0.00	0.00	0.00	0.15	
-1500	0.00	0.00	0.00	0.00	0.15	0.16	0.31	0.76	0.00	0.15	0.00	0.31	
-1000	0.15	0.34	0.00	0.16	0.45	0.79	1.68	7.31	2.67	1.68	0.78	0.46	
-500	12.04	13.25	11.16	10.22	11.54	22.66	28.90	39.27	24.06	27.52	13.97	13.21	
0	69.82	70.40	72.63	70.91	64.47	45.80	40.67	24.05	47.17	44.34	70.17	69.74	
500	13.26	13.43	12.23	11.48	13.64	13.63	10.24	8.37	13.68	11.62	11.30	12.14	
1000	2.29	1.20	1.68	2.67	4.35	5.23	3.82	4.57	4.56	6.12	1.73	2.46	
1500	0.91	0.69	0.92	1.10	0.90	2.85	2.45	1.22	2.83	2.45	0.94	0.61	
2000	0.46	0.00	0.46	0.31	0.90	0.16	1.22	0.91	0.79	0.61	0.47	0.00	
2500	0.30	0.17	0.15	0.31	0.15	1.27	1.07	0.76	0.63	0.15	0.16	0.31	
3000	0.00	0.00	0.15	0.16	0.00	0.32	0.61	0.00	0.00	0.46	0.00	0.31	
3500	0.00	0.00	0.00	0.00	0.00	0.00	0.31	0.15	0.00	0.00	0.00	0.00	
4000	0.15	0.00	0.00	0.16	0.15	0.00	0.15	0.00	0.00	0.31	0.00	0.15	
4500	0.00	0.00	0.00	0.00	0.00	0.32	0.15	0.15	0.31	0.15	0.00	0.00	
5000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.16	0.00	0.00	0.00	
5500	0.00	0.00	0.00	0.00	0.00	0.32	0.61	0.83	0.31	0.00	0.00	0.00	
6000	0.00	0.00	0.00	0.79	2.40	6.18	7.65	3.35	2.83	3.98	0.00	0.00	
6500	0.61	0.52	0.61	1.73	0.75	0.32	0.00	0.00	0.00	0.46	0.47	0.15	
Total	656	581	654	636	667	631	654	657	636	654	637	651	7714

Figure 3-8

HEIGHT DISTRIBUTION

Makah, WA (UJL RAOB Data) Range = 175 NM Angle = 0 DEG

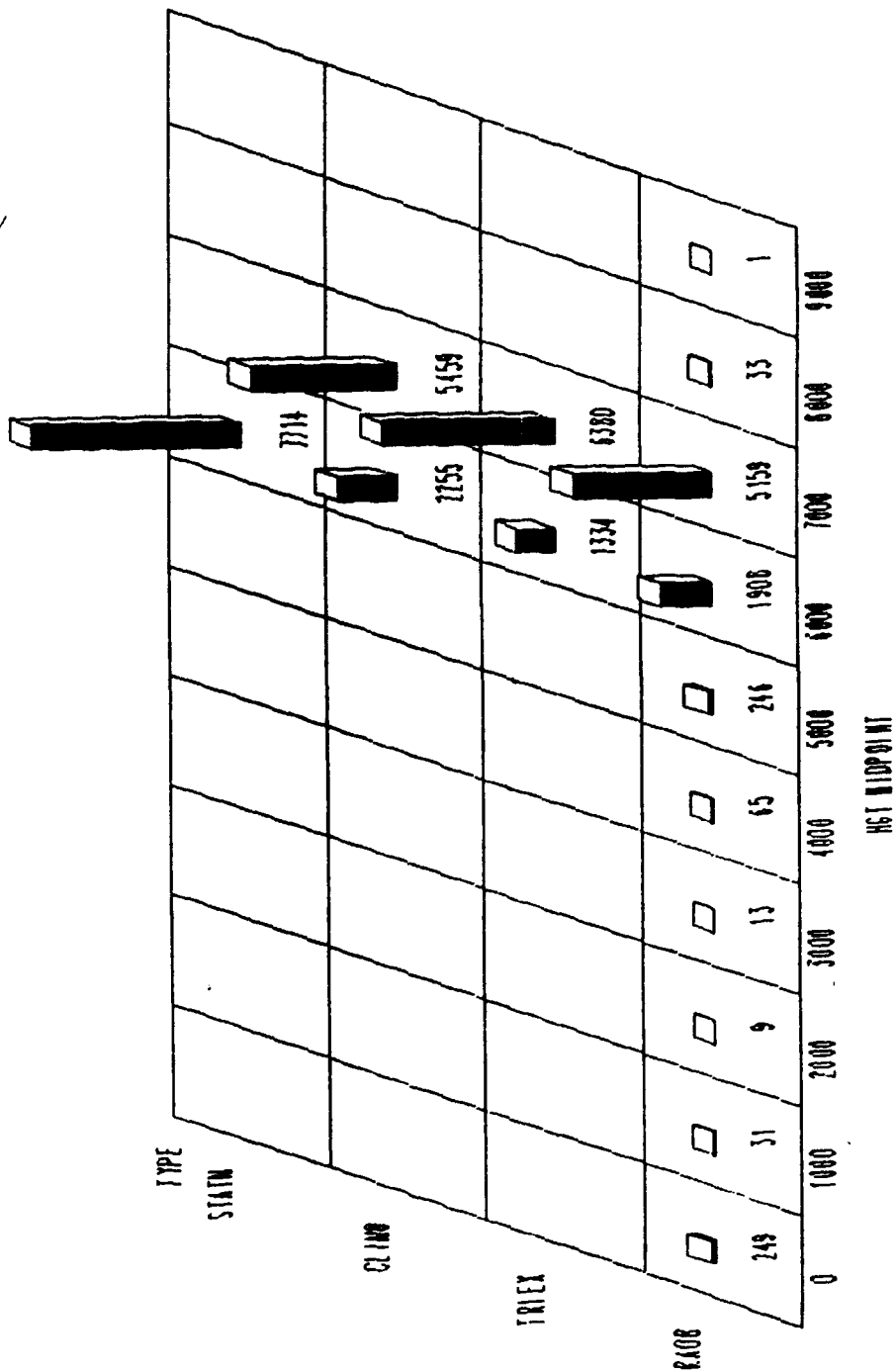


Figure 3-9

RMS ERRORS (meters) FOR
Oceana, VA (WAL RAOB Data)
Range=175 NM Angle=0 DEG

ENTIRE FOR

TRIEXPONENTIAL	CLIMATOLOGY	STANDARD ATMOSPHERE
1857	1858	1941

RMS HEIGHT ERRORS FROM THE TRIEXPONENTIAL MODEL
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	1085	1103	1068
FEB	1424	1525	1319
MAR	1581	1611	1551
APR	2212	2178	2245
MAY	2376	2344	2408
JUN	2448	2275	2602
JUL	2179	2373	1966
AUG	1916	1982	1850
SEP	1776	1709	1839
OCT	1898	1958	1837
NOV	1544	1498	1587
DEC	1313	1145	1460

RMS HEIGHT ERRORS FROM CLIMATOLOGY
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	1064	1082	1045
FEB	1409	1516	1297
MAR	1569	1620	1518
APR	2137	2143	2130
MAY	2306	2276	2334
JUN	2373	2207	2520
JUL	2248	2498	1968
AUG	1982	2099	1862
SEP	1934	1885	1980
OCT	1916	1990	1841
NOV	1528	1463	1590
DEC	1279	1115	1423

Figure 4-1

MONTHLY RMS HEIGHT ERRORS
 Oceano, VA (WAL RA08 Data) Range=175 NM Angle=0 DEG

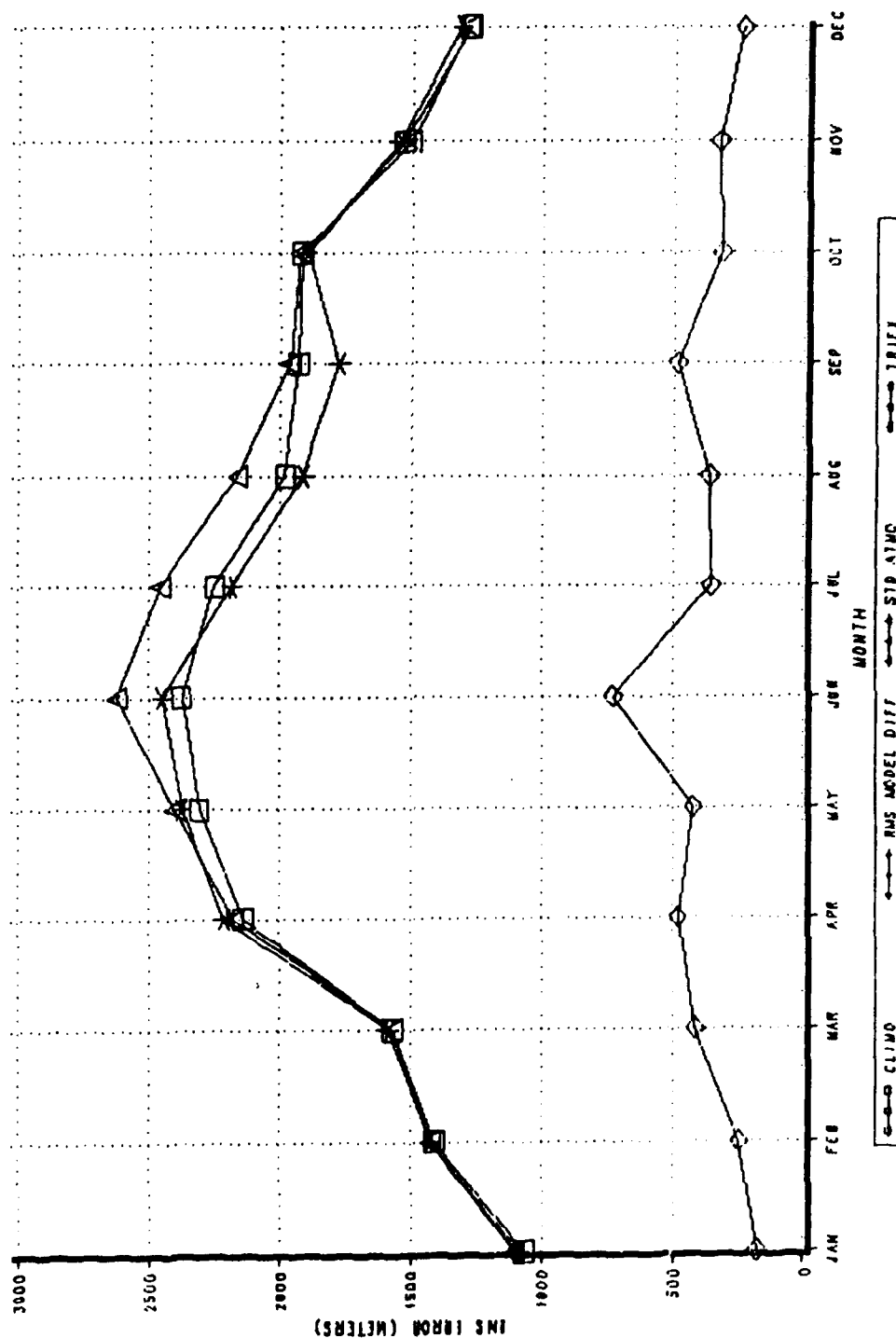


Figure 4-2

MONTHLY RMS HEIGHT ERRORS BY HOUR

Oceanic, VA (WAL RAOB Data)
Range=173 NM Angle=0 DEG

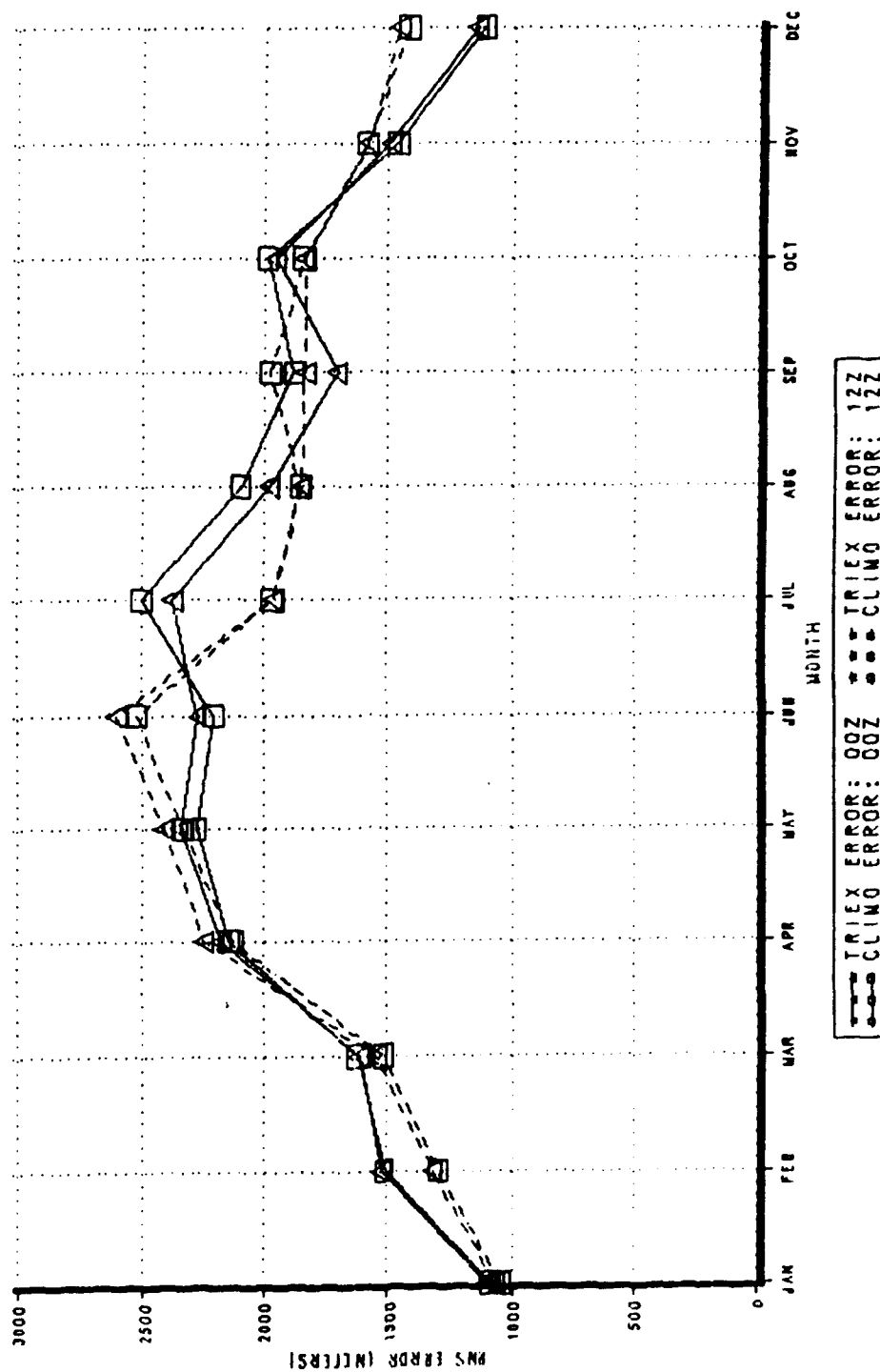


Figure 4-3

ERROR STATISTICS
 Oceana, VA (WAL RAOB Data)
 Range=175 NM Angle=0 DEG

MODEL	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
TRIEXPONENTIAL	417.40	1809.21	-2890.4	6519.7
CLIMATOLOGY	306.64	1832.67	-4321.0	6287.7
STANDARD ATMOSPHERE	467.85	1883.48	-3879.1	5974.2

Figure 4-4

TRIEXPONENTIAL MODEL ERRORS
Oceana, VA (WAL RAOB Data)
Range=175 NM Angle=0 DEG

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-3000	3	0.0	3	0.0
-2500	10	0.1	13	0.2
-2000	48	0.6	61	0.8
-1500	252	3.4	313	4.2
-1000	808	10.9	1121	15.2
-500	1832	24.8	2953	39.9
0	2162	29.2	5115	69.2
500	865	11.7	5980	80.9
1000	352	4.8	6332	85.6
1500	185	2.5	6517	88.1
2000	100	1.4	6617	89.5
2500	62	0.8	6679	90.3
3000	31	0.4	6710	90.7
3500	23	0.3	6733	91.1
4000	14	0.2	6747	91.2
4500	20	0.3	6767	91.5
5000	121	1.6	6888	93.2
5500	196	2.7	7084	95.8
6000	230	3.1	7314	98.9
6500	80	1.1	7394	100.0

CLIMATOLOGY ERRORS

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-4500	2	0.0	2	0.0
-4000	4	0.1	6	0.1
-3500	4	0.1	10	0.1
-3000	11	0.1	21	0.3
-2500	20	0.3	41	0.6
-2000	70	0.9	111	1.5
-1500	325	4.4	436	5.9
-1000	979	13.2	1415	19.1
-500	2310	31.2	3725	50.4
0	1554	21.0	5279	71.4
500	734	9.9	6013	81.3
1000	340	4.6	6353	85.9
1500	166	2.2	6519	88.2
2000	102	1.4	6621	89.5
2500	56	0.8	6677	90.3
3000	34	0.5	6711	90.8
3500	23	0.3	6734	91.1
4000	12	0.2	6746	91.2
4500	57	0.8	6803	92.0
5000	61	0.8	6864	92.8
5500	291	3.9	7155	96.8
6000	215	2.9	7370	99.7
6500	24	0.3	7394	100.0

Figure 4-5

HEIGHT ERROR DISTRIBUTION Oceana, VA (WAL RA08 Data) Range=175 NM Angle=0 DEG

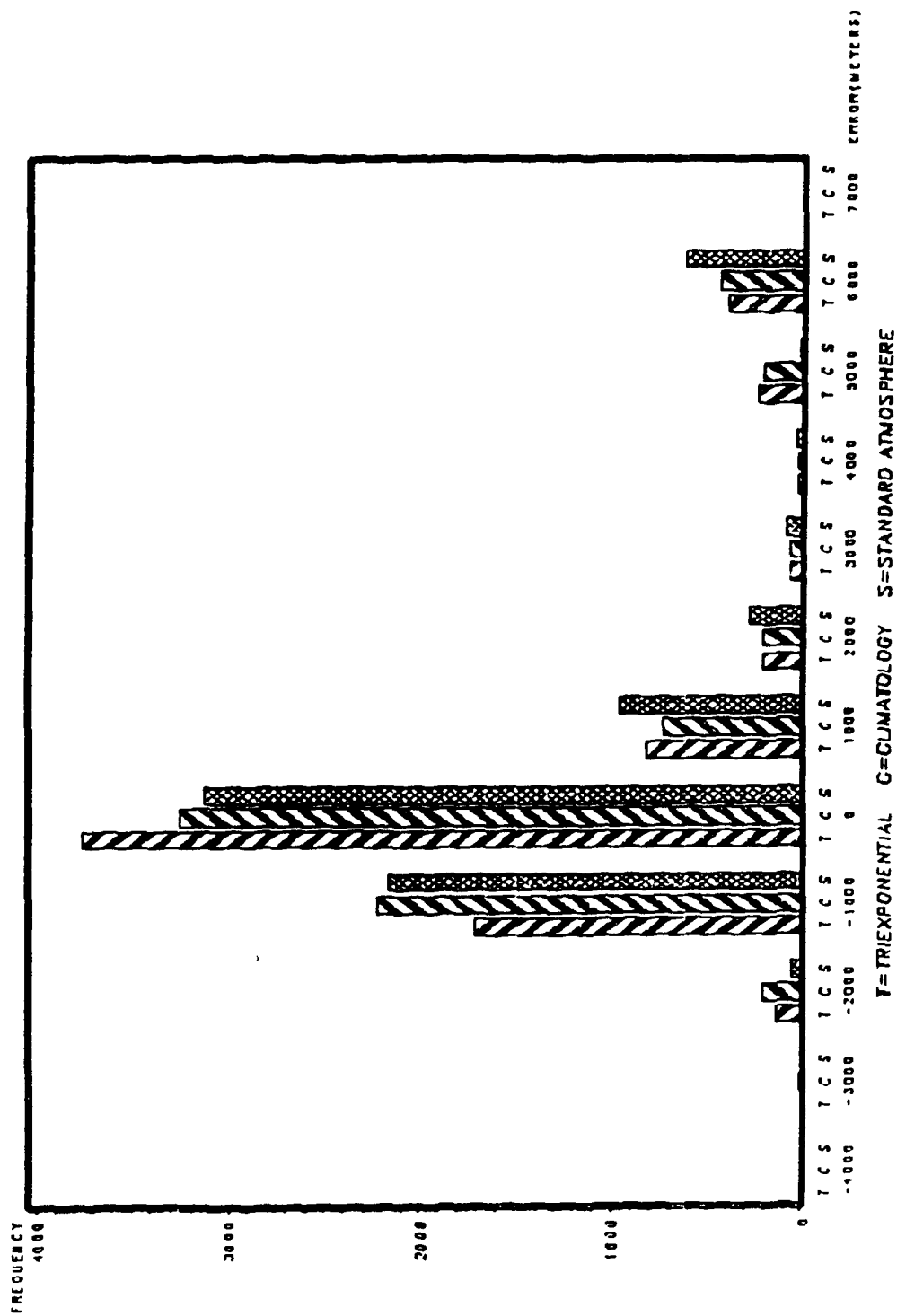


Figure 4-6

TRIEXPONENTIAL MODEL ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
-3000	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.30	0.00	0.00	0.00	0.00	
-2500	0.00	0.00	0.00	0.18	0.34	0.35	0.00	0.45	0.16	0.15	0.00	0.00	
-2000	0.34	0.56	0.51	0.18	1.03	1.56	1.36	1.21	0.31	0.30	0.31	0.15	
-1500	1.69	3.93	3.38	2.28	5.31	3.82	7.24	6.20	2.99	1.05	1.54	1.49	
-1000	3.22	6.92	9.48	10.33	12.67	10.42	15.54	17.55	14.78	10.81	10.32	7.59	
-500	23.56	21.50	24.20	25.92	24.14	24.13	20.66	21.63	29.56	25.53	30.05	25.89	
0	49.15	45.98	35.87	27.67	17.64	18.75	19.00	19.97	21.38	29.28	29.43	39.43	
500	13.05	9.72	11.34	11.21	12.33	11.28	10.56	10.59	11.01	13.36	13.25	12.35	
1000	4.24	3.55	4.74	3.68	5.31	5.38	5.13	5.75	5.66	4.80	4.93	3.72	
1500	1.19	1.68	2.20	2.63	2.57	3.30	1.96	2.42	2.67	3.00	2.93	3.27	
2000	0.34	0.93	1.52	2.45	1.54	1.56	1.96	1.51	0.94	1.20	0.77	1.49	
2500	0.51	0.37	0.34	0.70	1.88	1.39	0.75	1.06	1.10	0.75	0.62	0.60	
3000	0.17	0.56	0.34	0.53	0.34	0.17	0.75	0.61	0.16	0.60	0.46	0.30	
3500	0.17	0.19	0.51	0.53	0.51	0.35	0.45	0.45	0.16	0.00	0.15	0.30	
4000	0.00	0.19	0.17	0.18	0.51	0.17	0.30	0.00	0.31	0.30	0.15	0.00	
4500	0.17	0.00	0.34	0.00	0.17	0.52	0.30	0.76	0.47	0.15	0.15	0.15	
5000	0.00	0.00	0.51	0.18	0.00	2.60	6.94	4.39	3.46	0.45	0.00	0.30	
5500	0.51	0.00	0.00	0.35	3.25	10.76	6.49	4.39	3.30	2.25	0.15	0.15	
6000	0.00	0.3	2.71	9.28	10.10	3.47	0.45	0.76	1.42	4.65	3.24	1.19	
6500	1.69	2.99	1.86	1.75	0.34	0.00	0.00	0.00	0.16	1.35	1.54	1.64	
Total	590	535	591	571	584	576	663	661	636	666	649	672	7394

Figure 4-7

CLIMATOLOGY ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												Total
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
-4500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.00	0.00	0.00	0.00	
-4000	0.00	0.00	0.00	0.00	0.00	0.35	0.15	0.15	0.00	0.00	0.00	0.00	
-3500	0.00	0.00	0.00	0.18	0.17	0.17	0.00	0.00	0.16	0.00	0.00	0.00	
-3000	0.00	0.00	0.17	0.00	0.34	0.35	0.00	0.30	0.16	0.45	0.00	0.00	
-2500	0.00	0.56	0.34	0.18	0.17	1.91	0.00	0.00	0.00	0.15	0.15	0.00	
-2000	0.00	0.37	0.34	0.53	1.71	5.73	1.51	1.06	0.16	0.00	0.31	0.00	
-1500	0.85	3.74	5.41	5.78	9.08	14.76	5.73	5.75	1.10	0.15	0.92	1.04	
-1000	3.73	6.92	24.20	25.39	23.29	16.32	14.48	14.07	6.60	7.36	9.71	8.78	
-500	42.88	50.09	37.90	29.25	23.29	16.32	20.81	21.49	23.90	34.53	35.59	40.92	
0	34.58	23.36	13.71	14.36	9.42	11.98	17.35	19.36	27.04	24.62	25.42	28.87	
500	10.00	5.05	6.77	5.60	8.90	6.94	11.92	12.71	15.09	12.16	13.10	8.78	
1000	3.90	3.18	2.20	2.45	4.11	3.82	6.49	6.66	6.92	5.41	5.24	3.87	
1500	0.68	0.75	1.69	1.58	1.37	1.39	2.87	4.08	5.35	2.85	1.85	1.79	
2000	0.17	0.75	0.85	1.75	1.88	1.39	1.96	0.91	2.67	1.05	1.39	1.64	
2500	0.51	0.75	0.17	0.53	1.20	0.69	0.90	1.06	0.63	1.50	0.62	0.45	
3000	0.17	0.37	0.68	0.70	0.17	0.00	0.90	1.06	0.47	0.45	0.31	0.15	
3500	0.17	0.00	0.17	0.18	0.86	0.35	0.30	0.61	0.47	0.15	0.31	0.15	
4000	0.00	0.19	0.17	0.00	0.17	0.52	0.30	0.15	0.16	0.00	0.00	0.30	
4500	0.17	0.00	0.68	0.18	0.00	7.47	0.15	0.15	0.31	0.30	0.15	0.15	
5000	0.17	0.00	0.00	0.18	0.00	1.74	5.88	0.91	0.31	0.15	0.00	0.15	
5500	0.34	0.00	0.17	5.95	13.87	7.81	8.30	9.23	0.94	0.60	0.15	0.15	
6000	0.17	3.93	4.40	5.25	0.00	0.00	0.00	0.00	7.55	8.11	2.47	2.83	
6500	1.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.31	0.00	
Total	590	535	591	571	584	576	663	661	636	666	649	672	7394

Figure 4-8

HEIGHT DISTRIBUTION

Oceana, VA (WAL RAOB Data) Range = 175 NM Angle = 0 DEG

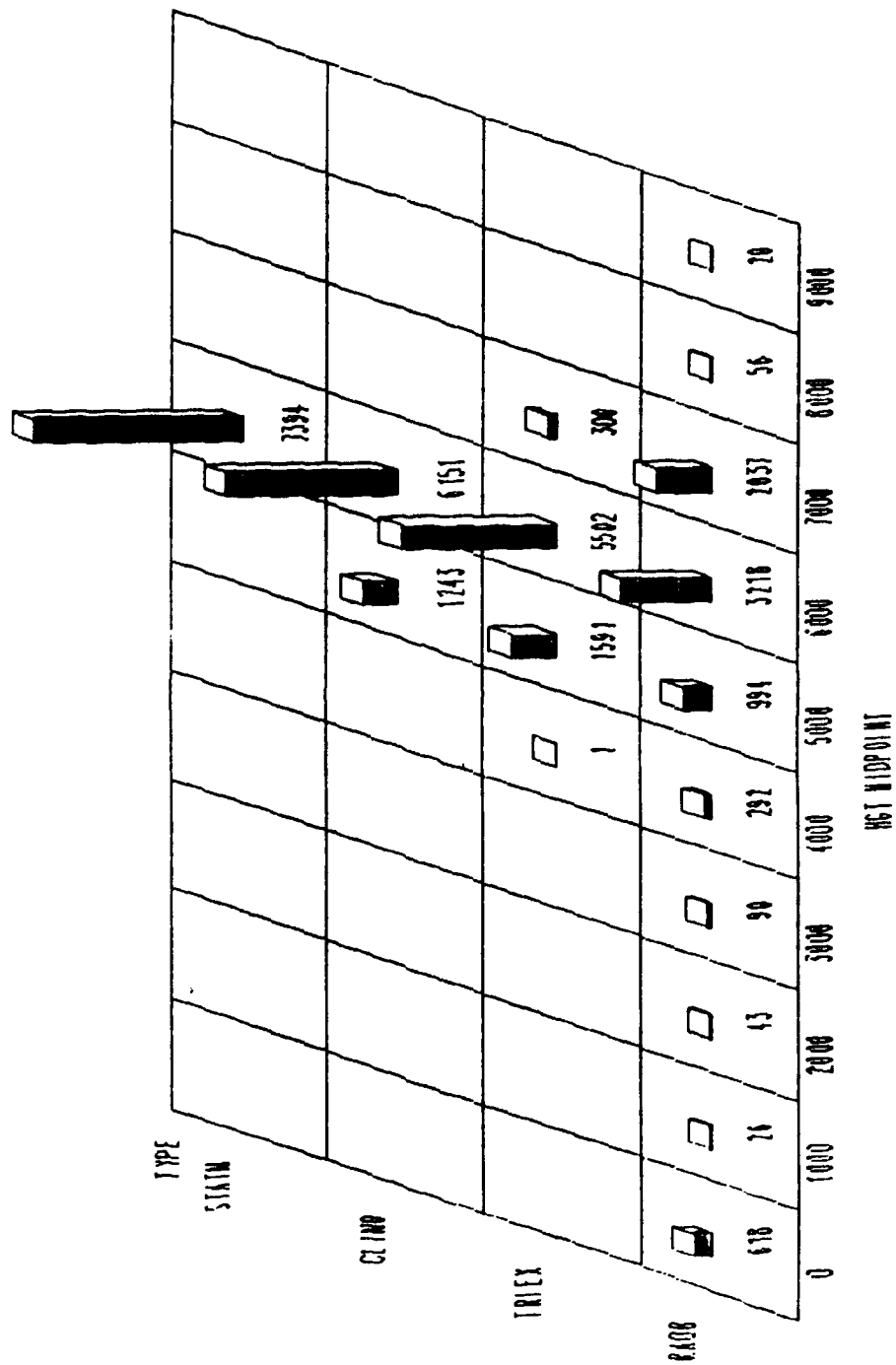


Figure 4-9

RMS ERRORS (meters) FOR
 Lake Charles, LA (LCH RAOB Data)
 Range=175 NM Angle=0 DEG

ENTIRE POR

TRIEXPONENTIAL	CLIMATOLOGY	STANDARD ATMOSPHERE
1833	1822	1894

RMS HEIGHT ERRORS FROM THE TRIEXPONENTIAL MODEL
 BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	1480	1163	1742
FEB	1680	1246	2022
MAR	2079	1657	2430
APR	2203	1676	2622
MAY	1954	1878	2028
JUN	1662	1588	1732
JUL	1612	1816	1382
AUG	1617	1678	1554
SEP	1796	1821	1770
OCT	2065	1647	2412
NOV	1876	1587	2123
DEC	1801	1509	2052

RMS HEIGHT ERRORS FROM CLIMATOLOGY
 BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	1427	1132	1673
FEB	1645	1241	1968
MAR	1990	1623	2299
APR	2198	1588	2668
MAY	1918	1875	1962
JUN	1712	1643	1778
JUL	1654	1895	1377
AUG	1649	1784	1503
SEP	1824	1906	1739
OCT	2046	1635	2388
NOV	1879	1537	2165
DEC	1767	1448	2036

Figure 5-1

MONTHLY RMS HEIGHT ERRORS
 Lake Charles, LA (LCH RA08 Data) Range=175 NM Angle=0 DEG

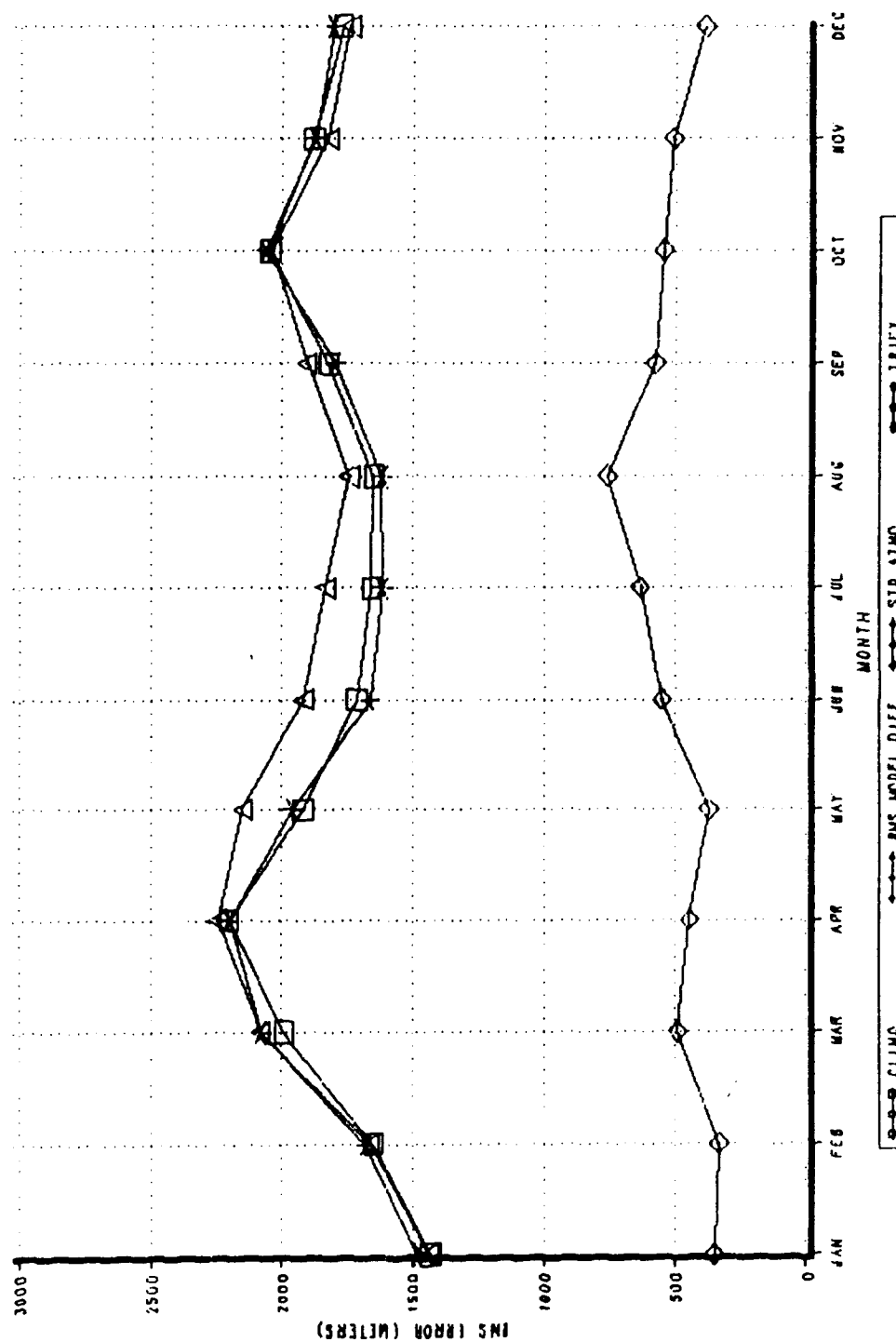


Figure 5-2

MONTHLY RMS HEIGHT ERRORS BY HOUR

Lake Charles, LA (LCH RAOB Data)
Range=175 NM Angle=0.050

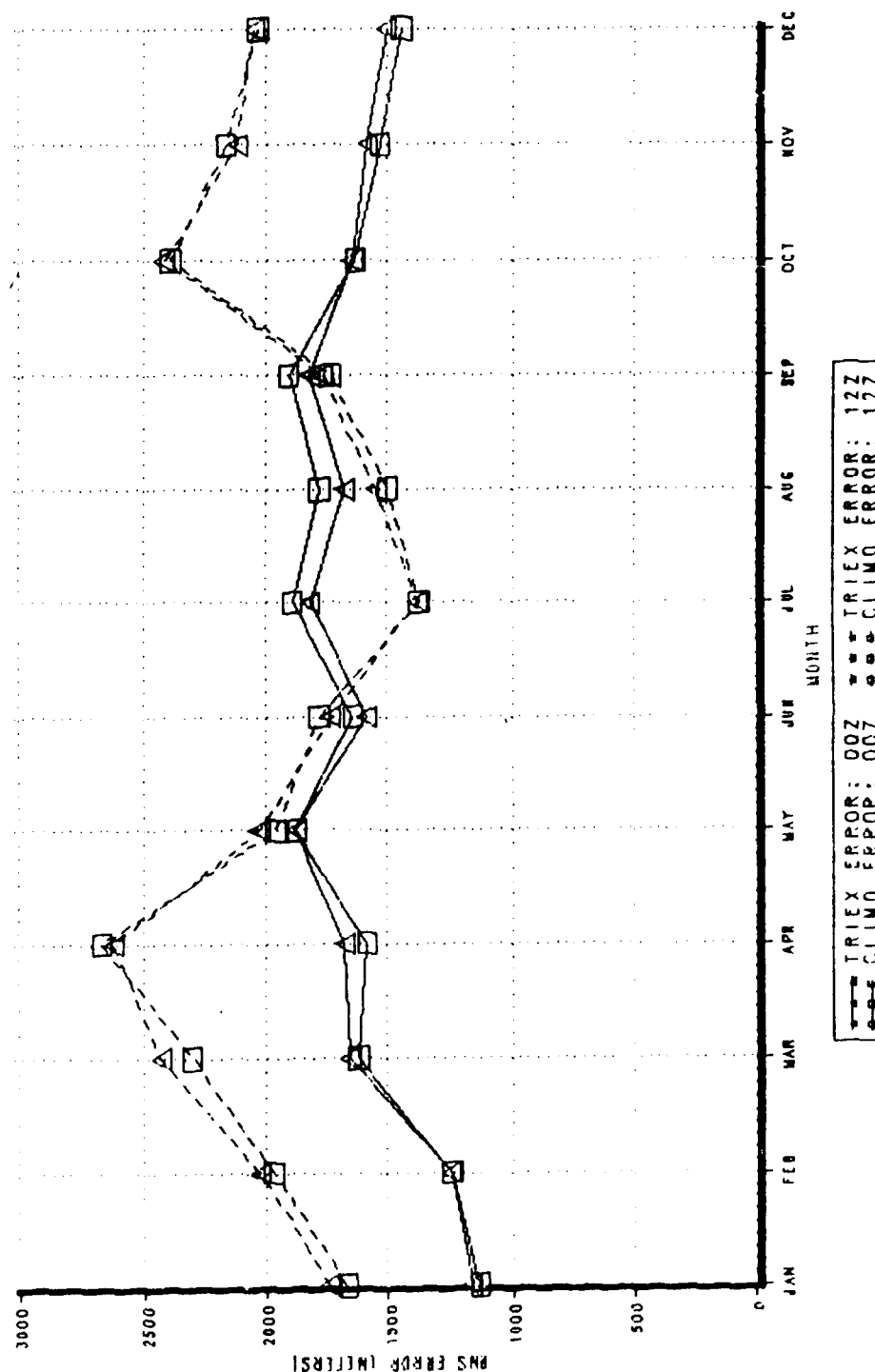


Figure 5-3

ERROR STATISTICS
Lake Charles, LA (LCH RAOB Data)
Range=175 NM Angle=0 DEG

MODEL	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
TRIEXPONENTIAL	291.35	1809.84	-2651.2	6519.7
CLIMATOLOGY	397.32	1778.09	-3450.4	6261.8
STANDARD ATMOSPHERE	645.17	1780.61	-3150.6	5970.6

Figure 5-4

TRIEXPONENTIAL MODEL ERRORS
Lake Charles, LA (LCH RAOB Data)
Range=175 NM Angle=0 DEG

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-2500	5	0.1	5	0.1
-2000	56	0.7	61	0.8
-1500	522	6.7	583	7.5
-1000	1359	17.4	1942	24.9
-500	1769	22.6	3711	47.5
0	1674	21.4	5385	68.9
500	901	11.5	6286	80.5
1000	404	5.2	6690	85.6
1500	209	2.7	6899	88.3
2000	127	1.6	7026	89.9
2500	65	0.8	7091	90.8
3000	39	0.5	7130	91.3
3500	34	0.4	7164	91.7
4000	14	0.2	7178	91.9
4500	32	0.4	7210	92.3
5000	164	2.1	7374	94.4
5500	145	1.9	7519	96.2
6000	238	3.0	7757	99.3
6500	56	0.7	7813	100.0

CLIMATOLOGY ERRORS

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-3500	1	0.0	1	0.0
-3000	4	0.1	5	0.1
-2500	6	0.1	11	0.1
-2000	37	0.5	48	0.6
-1500	247	3.2	295	3.8
-1000	1041	13.3	1336	17.1
-500	2055	26.3	3391	43.4
0	1842	23.6	5233	67.0
500	916	11.7	6149	78.7
1000	470	6.0	6619	84.7
1500	265	3.4	6884	88.1
2000	135	1.7	7019	89.8
2500	63	0.8	7082	90.6
3000	46	0.6	7128	91.2
3500	25	0.3	7153	91.6
4000	21	0.3	7174	91.8
4500	17	0.2	7191	92.0
5000	103	1.3	7294	93.4
5500	223	2.9	7517	96.2
6000	270	3.5	7787	99.7
6500	26	0.3	7813	100.0

Figure 5-5

HEIGHT ERROR DISTRIBUTION Lake Charles, LA (LCH RA08 Data) Range=175 NM Angle=0 DEG

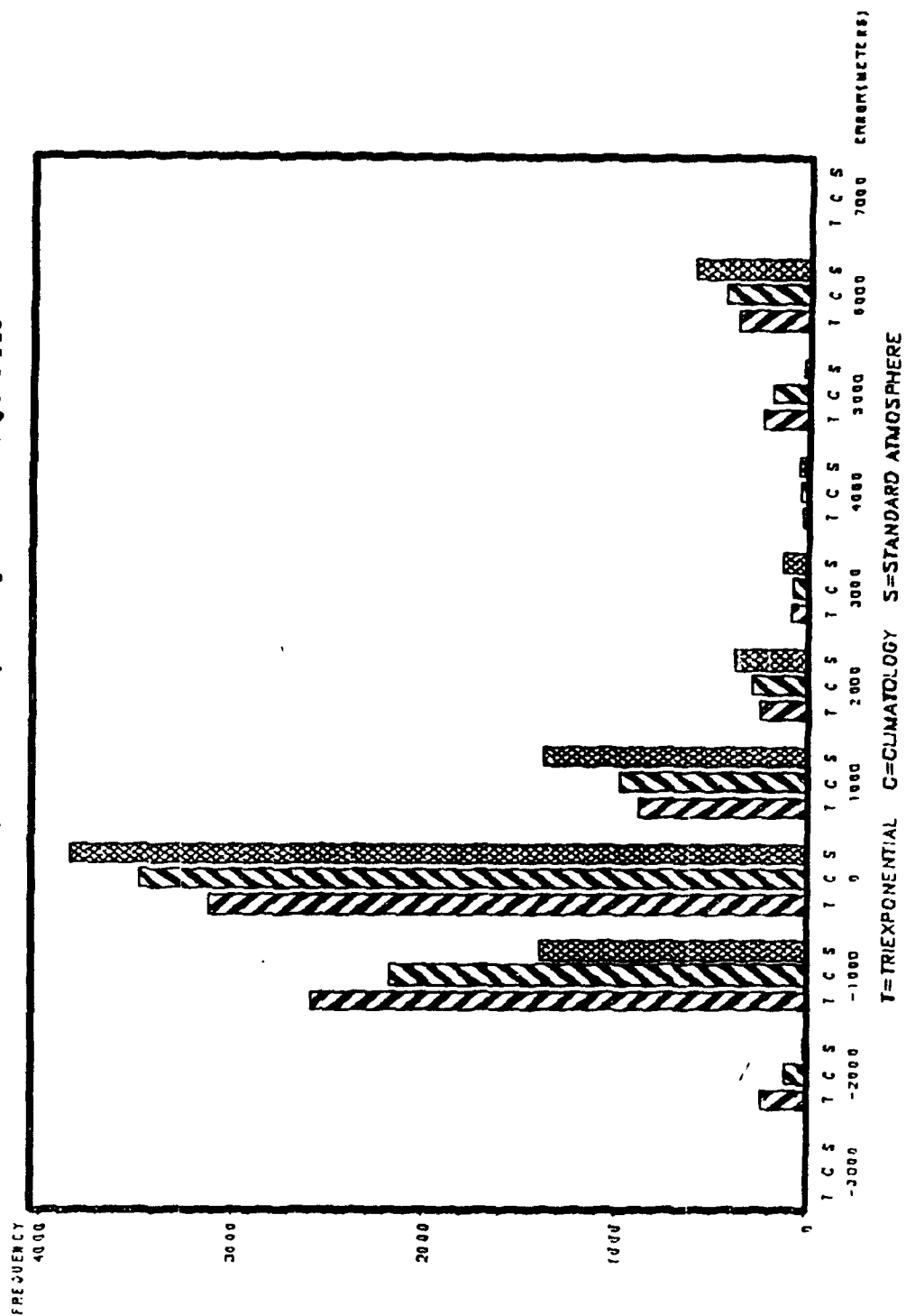


Figure 5-6

TRIEXPONENTIAL MODEL ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												Total
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
-2500	0.00	0.00	0.15	0.15	0.00	0.00	0.31	0.15	0.00	0.00	0.00	0.00	
-2000	0.00	0.00	0.15	0.15	0.15	0.16	1.72	2.17	1.99	1.50	0.32	0.30	
-1500	1.49	1.15	0.75	2.45	2.97	7.55	12.97	20.43	14.57	10.06	4.63	1.49	
-1000	7.43	6.90	8.70	9.65	16.94	25.94	27.66	27.55	24.69	19.67	19.14	14.90	
-500	21.40	23.65	26.09	23.28	24.96	21.70	22.50	19.50	20.55	20.72	25.04	22.35	
0	38.48	36.12	26.84	23.12	18.13	14.78	12.81	12.38	11.96	16.37	19.30	26.68	
500	16.20	15.93	11.99	14.24	12.33	11.16	7.34	4.64	7.82	10.66	12.28	13.71	
1000	4.90	4.76	7.05	7.04	5.50	4.09	3.28	2.63	5.06	5.26	5.90	6.41	
1500	2.53	1.97	2.85	4.13	3.86	2.83	2.19	0.93	1.99	2.85	2.55	3.28	
2000	1.49	0.82	2.25	1.68	2.23	2.36	0.94	1.24	1.07	1.20	1.75	2.38	
2500	0.89	1.15	1.35	0.61	0.59	1.10	0.47	1.08	1.38	0.45	0.32	0.60	
3000	0.15	0.66	1.05	0.15	0.74	0.47	0.47	0.62	0.46	0.75	0.32	0.15	
3500	0.45	0.16	0.15	0.31	1.04	0.47	0.47	1.08	0.31	0.30	0.16	0.30	
4000	0.00	0.00	0.15	0.61	0.45	0.31	0.16	0.00	0.00	0.00	0.16	0.30	
4500	0.00	0.33	0.15	0.00	0.30	0.94	1.56	0.62	0.46	0.30	0.32	0.00	
5000	0.00	0.49	0.30	1.38	3.57	4.09	5.00	4.18	4.29	1.05	0.32	0.60	
5500	0.59	0.66	2.55	3.83	4.46	1.89	0.16	0.77	3.22	2.25	1.44	0.30	
6000	2.23	3.61	6.15	5.97	1.78	0.16	0.00	0.00	0.15	6.31	5.26	4.77	
6500	1.78	1.64	1.35	1.23	0.00	0.00	0.00	0.00	0.00	0.30	0.80	1.49	
Total	673	609	667	653	673	636	640	646	652	666	627	671	7813

Figure 5-7

CLIMATOLOGY ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
-3500	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
-3000	0.00	0.00	0.00	0.15	0.15	0.16	0.00	0.15	0.00	0.00	0.00	0.00	
-2500	0.00	0.16	0.00	0.15	0.00	0.31	0.16	0.00	0.00	0.00	0.16	0.00	
-2000	0.15	0.00	0.15	0.00	1.19	1.42	1.25	0.77	0.15	0.45	0.16	0.00	
-1500	2.08	0.82	3.90	0.77	6.09	4.09	6.88	3.10	2.30	6.46	0.48	0.75	
-1000	10.25	8.70	24.14	12.71	19.02	13.36	12.03	11.61	15.34	17.87	6.06	7.90	
-500	37.00	36.45	25.04	21.44	24.96	24.06	20.16	23.22	24.08	23.87	23.44	31.89	
0	27.79	28.57	15.89	24.81	16.34	23.43	23.91	25.08	23.16	20.27	29.82	24.74	
500	9.06	9.03	9.75	13.48	9.96	9.91	13.75	14.24	11.50	9.16	15.79	15.20	
1000	5.35	4.60	4.65	6.74	4.46	6.45	6.41	6.35	6.75	5.56	9.09	5.96	
1500	2.08	2.63	2.40	4.29	3.12	4.09	4.38	4.18	4.29	2.70	3.51	3.13	
2000	0.59	0.99	1.95	1.84	2.23	2.04	2.19	1.55	1.38	1.80	2.07	2.09	
2500	0.59	0.49	0.75	0.15	0.89	1.89	0.63	1.08	1.38	0.90	0.64	0.30	
3000	0.15	0.66	0.60	0.15	0.74	0.94	0.78	1.24	0.77	0.30	0.48	0.30	
3500	0.30	0.16	0.00	0.31	0.15	0.16	0.47	1.24	0.46	0.30	0.00	0.30	
4000	0.00	0.00	0.30	0.46	0.59	0.31	0.16	0.46	0.31	0.15	0.16	0.30	
4500	0.00	0.33	0.00	0.15	0.15	0.47	0.47	0.15	0.15	0.30	0.32	0.15	
5000	0.15	0.16	0.30	0.00	5.65	3.62	4.84	0.00	0.31	0.45	0.16	0.15	
5500	0.45	0.82	10.04	3.37	4.31	3.30	0.31	3.41	4.91	3.00	0.00	0.00	
6000	4.01	5.42	0.00	9.04	0.00	0.00	1.25	2.17	2.76	6.46	3.51	6.86	
6500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.15	0.00	
Total	673	609	667	653	673	636	640	646	652	666	627	671	7813

Figure 5-8

HEIGHT DISTRIBUTION

Lake Charles, LA (LCH RAOB Data) Range = 175 NM Angle = 0 DEG

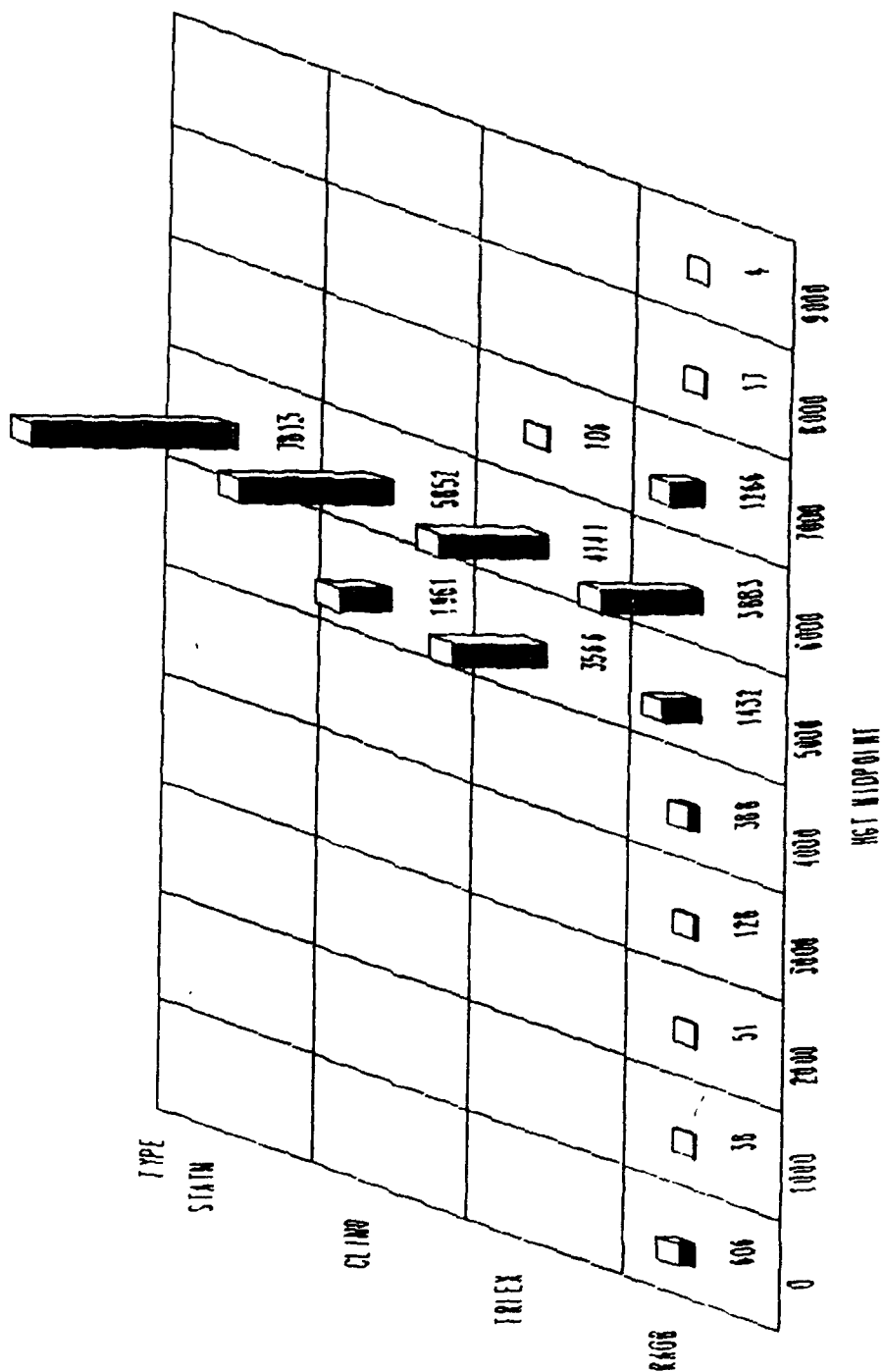


Figure 5-9

RMS ERRORS (meters) FOR
 San Clemente, CA (SAN RAOB Data)
 Range=175 NM Angle=0 DEG

ENTIRE POR

TRIEXPONENTIAL	CLIMATOLOGY	STANDARD ATMOSPHERE
2399	2361	2404

RMS HEIGHT ERRORS FROM THE TRIEXPONENTIAL MODEL
 BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	1333	1235	1426
FEB	1462	1367	1554
MAR	1818	1893	1737
APR	2190	2197	2183
MAY	2903	2784	3016
JUN	3420	2989	3800
JUL	2967	2536	3341
AUG	3147	2791	3472
SEP	2719	2614	2822
OCT	2295	2027	2535
NOV	1694	1639	1748
DEC	1483	1354	1604

RMS HEIGHT ERRORS FROM CLIMATOLOGY
 BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	1349	1253	1440
FEB	1480	1422	1537
MAR	1765	1831	1695
APR	2076	2067	2086
MAY	2506	2429	2580
JUN	3995	2671	4973
JUL	2915	2547	3240
AUG	2845	2686	2998
SEP	2494	2443	2544
OCT	2204	1961	2423
NOV	1701	1666	1736
DEC	1522	1407	1633

Figure 6-1

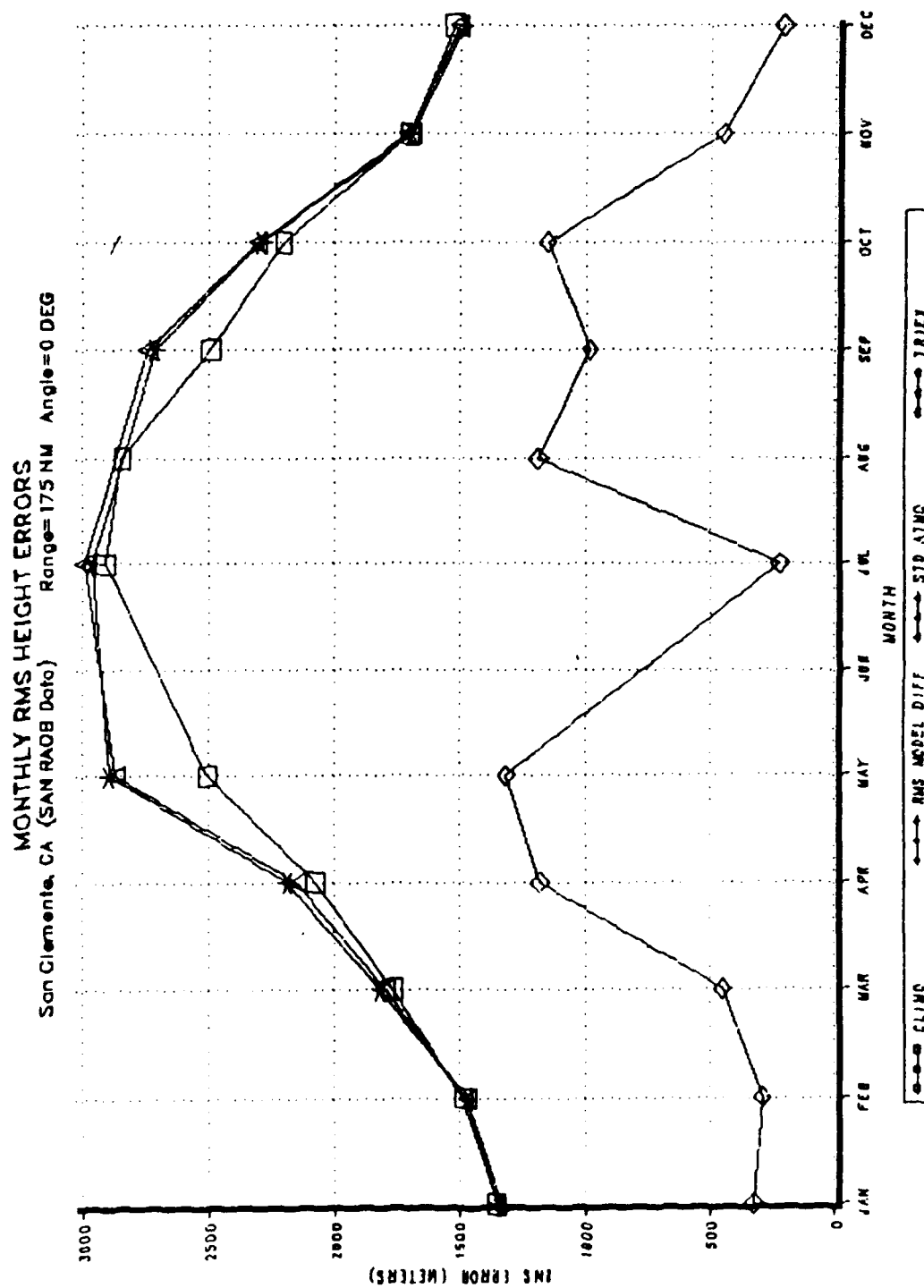


Figure 6-2

MONTHLY RMS HEIGHT ERRORS BY HOUR

San Clemente, CA (SAN RA08 Dddo)
Range=175 NM Angle=0 DEO

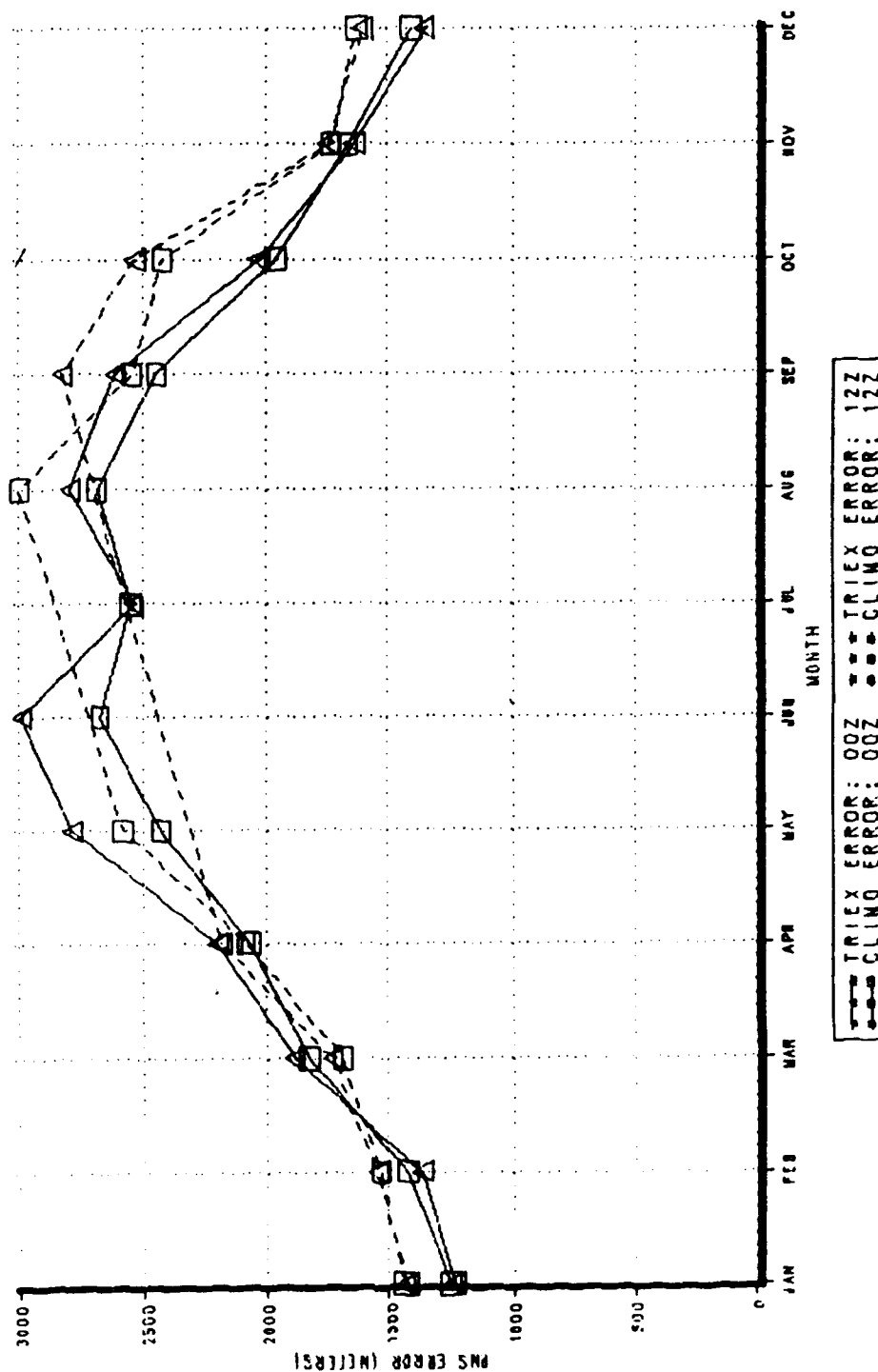


Figure 6-3

ERROR STATISTICS
 San Clemente, CA (SAN RAOB Data)
 Range=175 NM Angle=0 DEG

MODEL	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
TRIEXPONENTIAL	893.95	2226.71	-2700.6	7005.8
CLIMATOLOGY	36.97	2361.04	-8016.9	6739.8
STANDARD ATMOSPHERE	773.73	2276.42	-2423.7	6675.4

Figure 6-4

TRIEXPONENTIAL MODEL ERRORS
San Clemente, CA (SAN RAOB Data)
Range=175 NM Angle=0 DEG

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-2500	9	0.1	9	0.1
-2000	26	0.3	35	0.4
-1500	108	1.4	143	1.8
-1000	689	8.8	832	10.7
-500	1417	18.2	2249	28.9
0	2394	30.7	4643	59.6
500	1105	14.2	5748	73.8
1000	515	6.6	6263	80.4
1500	206	2.6	6469	83.0
2000	124	1.6	6593	84.6
2500	56	0.7	6649	85.4
3000	34	0.4	6683	85.8
3500	21	0.3	6704	86.1
4000	8	0.1	6712	86.2
4500	9	0.1	6721	86.3
5000	13	0.2	6734	86.4
5500	17	0.2	6751	86.7
6000	709	9.1	7460	95.8
6500	326	4.2	7786	99.9
7000	4	0.1	7790	100.0

Figure 6-5

CLIMATOLOGY ERRORS				
ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-8000	2	0.0	2	0.0
-7500	9	0.1	11	0.1
-7000	72	0.9	83	1.1
-6500	14	0.2	97	1.2
-6000	36	0.5	133	1.7
-5500	36	0.5	169	2.2
-5000	21	0.3	190	2.4
-4500	8	0.1	198	2.5
-4000	6	0.1	204	2.6
-3500	11	0.1	215	2.8
-3000	32	0.4	247	3.2
-2500	150	1.9	397	5.1
-2000	369	4.7	766	9.8
-1500	737	9.5	1503	19.3
-1000	1279	16.4	2782	35.7
-500	1716	22.0	4498	57.7
0	1363	17.5	5861	75.2
500	545	7.0	6406	82.2
1000	202	2.6	6608	84.8
1500	108	1.4	6716	86.2
2000	59	0.8	6775	87.0
2500	26	0.3	6801	87.3
3000	21	0.3	6822	87.6
3500	16	0.2	6838	87.8
4000	20	0.3	6858	88.0
4500	134	1.7	6992	89.8
5000	241	3.1	7233	92.8
5500	242	3.1	7475	96.0
6000	234	3.0	7709	99.0
6500	81	1.0	7790	100.0

Figure 6-5a

HEIGHT ERROR DISTRIBUTION San Clemente, CA (SAN RAD8 Data) Range=175 NM Angle=0 DEG

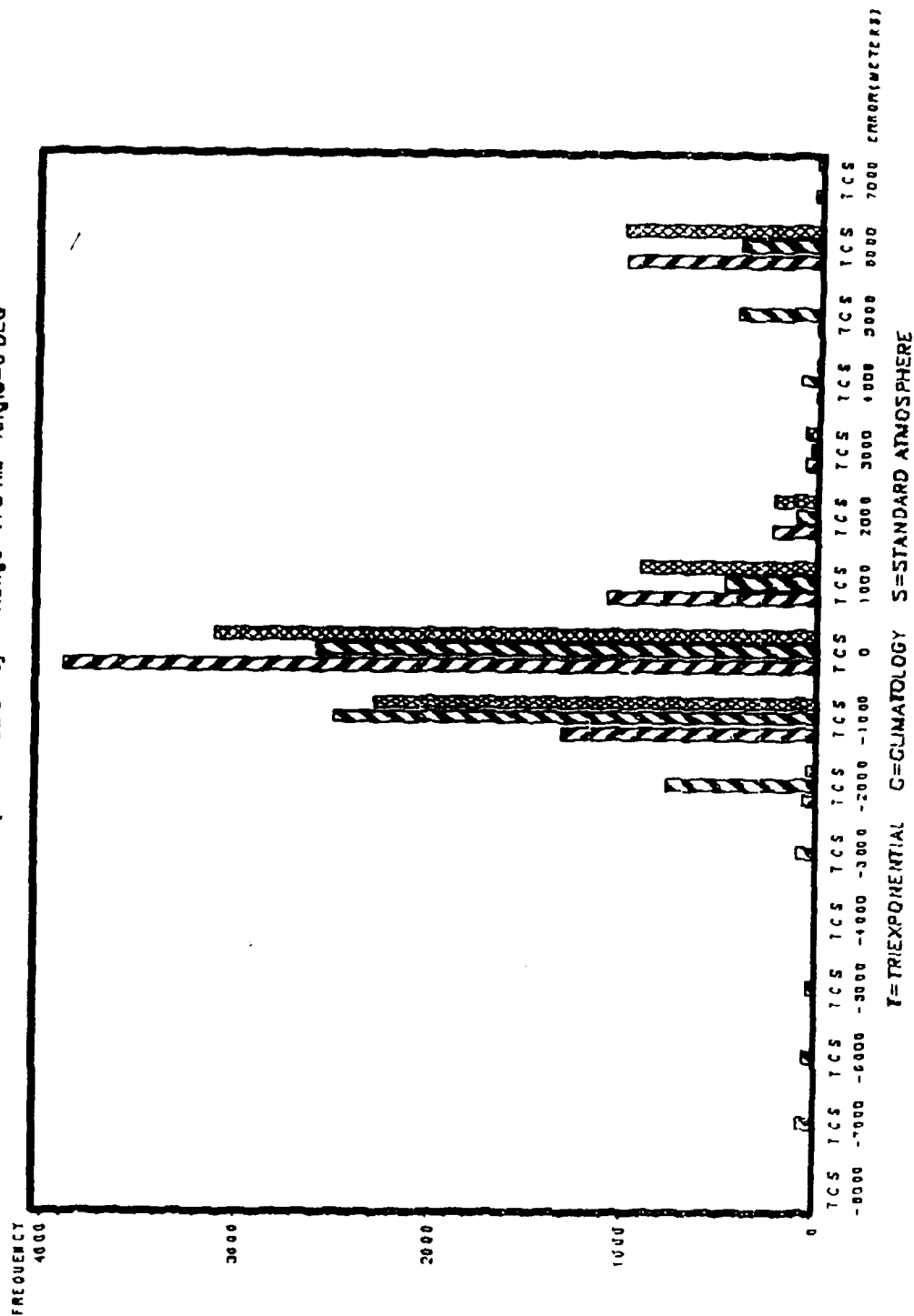


Figure 6-6

TRIEXPONENTIAL MODEL ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JL	AUG	SEP	OCT	NOV	DEC	Total
-2500	0.00	0.00	0.00	0.00	0.00	0.00	0.45	0.75	0.15	0.00	0.00	0.00	
-2000	0.00	0.00	0.00	0.00	0.00	0.31	0.90	1.80	0.77	0.15	0.00	0.00	
-1500	0.00	0.00	0.30	0.47	0.30	1.09	4.64	4.96	3.09	0.75	0.47	0.30	
-1000	1.67	1.01	3.20	4.42	4.93	14.29	22.90	18.50	13.60	12.59	5.06	2.74	
-500	25.11	25.51	16.29	19.27	9.40	11.49	13.47	16.99	15.15	21.29	21.17	24.05	
0	49.16	45.78	44.75	30.17	22.54	10.87	16.17	10.68	21.02	25.19	43.29	51.29	
500	12.63	14.70	17.96	19.12	23.13	12.89	7.78	7.82	14.84	13.19	14.53	11.87	
1000	4.72	5.74	5.63	8.69	9.55	9.63	5.54	6.92	7.26	7.65	5.21	2.74	
1500	1.22	1.18	2.13	2.69	5.22	5.59	3.29	3.31	2.01	3.00	1.11	0.76	
2000	1.22	0.34	1.22	2.53	2.24	2.17	2.25	1.35	2.16	2.10	0.63	0.76	
2500	0.30	0.51	0.46	0.95	1.04	1.09	0.45	0.90	0.77	0.90	1.26	0.00	
3000	0.00	0.17	0.30	0.32	0.75	0.78	0.60	0.45	0.62	0.30	0.79	0.15	
3500	0.00	0.17	0.15	0.32	0.15	0.62	0.30	0.60	0.31	0.30	0.00	0.30	
4000	0.00	0.34	0.15	0.00	0.15	0.31	0.00	0.30	0.00	0.00	0.00	0.00	
4500	0.15	0.00	0.00	0.32	0.15	0.31	0.15	0.15	0.00	0.15	0.00	0.00	
5000	0.00	0.00	0.15	0.16	0.30	0.31	0.15	0.15	0.31	0.30	0.00	0.15	
5500	0.00	0.00	0.00	0.00	0.15	0.47	0.30	1.05	0.31	0.15	0.16	0.00	
6000	1.52	1.52	3.35	3.95	13.43	20.65	14.52	20.30	14.84	8.55	3.48	1.98	
6500	2.28	3.04	3.81	6.64	6.57	6.99	5.99	2.86	2.78	3.45	2.84	2.89	
7000	0.00	0.00	0.15	0.00	0.00	0.16	0.15	0.15	0.00	0.00	0.00	0.00	
Total	657	592	657	633	670	644	668	665	647	667	633	657	7790

Figure 6-7

CLIMATOLOGY ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
-500	41.10	30.91	31.51	15.80	14.18	8.39	12.57	10.53	15.30	13.64	33.65	38.05	
0	27.25	32.60	25.27	9.00	6.27	21.74	12.72	6.17	7.57	9.00	21.33	32.88	
500	8.52	15.37	7.76	2.69	3.13	3.11	9.58	3.91	2.94	4.35	8.21	15.07	
1000	2.74	4.22	2.28	1.58	1.04	1.86	4.64	2.11	1.85	1.50	3.63	3.81	
1500	1.37	1.69	2.44	0.95	0.90	0.93	2.99	1.35	1.08	1.05	0.95	0.91	
2000	1.07	0.17	0.30	0.63	0.45	0.78	1.80	0.90	0.46	0.90	0.95	0.61	
2500	0.15	0.51	0.46	0.16	0.15	0.47	0.15	0.30	0.46	0.15	0.95	0.15	
3000	0.00	0.34	0.15	0.16	0.15	0.16	0.75	0.60	0.15	0.15	0.47	0.15	
3500	0.00	0.17	0.15	0.16	0.45	0.47	0.15	0.45	0.00	0.15	0.00	0.30	
4000	0.15	0.17	0.00	0.16	0.00	0.16	0.15	1.95	0.15	0.15	0.00	0.00	
4500	0.00	0.00	0.15	0.47	0.60	0.16	0.30	12.48	0.93	5.10	0.00	0.00	
5000	0.00	0.00	0.00	4.58	18.81	1.09	0.00	0.60	8.81	2.70	0.00	0.00	
5500	0.00	0.00	0.30	5.53	0.75	9.01	1.50	6.77	8.35	4.05	0.79	0.15	
6000	2.28	2.20	6.70	0.00	0.00	0.00	16.62	2.41	0.00	0.45	4.58	0.46	
6500	1.52	2.36	0.30	0.00	0.00	0.00	2.84	0.00	0.00	0.00	1.11	4.41	
Total	657	592	657	633	670	644	668	665	647	667	633	657	7790

Figure 6-8

CLIMATOLOGY ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												Total
Col Per	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
-8000	0.00	0.00	0.00	0.00	0.00	0.31	0.00	0.00	0.00	0.00	0.00	0.00	
-7500	0.00	0.00	0.00	0.00	0.00	1.40	0.00	0.00	0.00	0.00	0.00	0.00	
-7000	0.00	0.00	0.00	0.00	0.00	11.18	0.00	0.00	0.00	0.00	0.00	0.00	
-6500	0.00	0.00	0.00	0.00	0.00	2.17	0.00	0.00	0.00	0.00	0.00	0.00	
-6000	0.00	0.00	0.00	0.00	0.00	5.59	0.00	0.00	0.00	0.00	0.00	0.00	
-5500	0.00	0.00	0.00	0.00	0.00	5.59	0.00	0.00	0.00	0.00	0.00	0.00	
-5000	0.00	0.00	0.00	0.00	0.00	3.26	0.00	0.00	0.00	0.00	0.00	0.00	
-4500	0.00	0.00	0.00	0.00	0.00	1.24	0.00	0.00	0.00	0.00	0.00	0.00	
-4000	0.00	0.00	0.00	0.00	0.00	0.62	0.00	0.30	0.00	0.00	0.00	0.00	
-3500	0.00	0.00	0.00	0.00	0.00	0.31	0.00	1.20	0.15	0.00	0.00	0.00	
-3000	0.00	0.00	0.00	0.00	0.00	0.31	0.00	3.76	0.46	0.30	0.00	0.00	
-2500	0.00	0.00	0.00	0.47	1.04	0.31	0.15	11.73	3.09	5.85	0.00	0.00	
-2000	0.00	0.00	0.15	11.53	11.19	2.17	1.65	6.17	10.82	12.29	0.32	0.00	
-1500	0.46	0.17	1.52	23.70	17.16	11.49	6.29	13.53	18.55	17.99	1.74	0.15	
-1000	13.39	9.12	20.55	22.43	23.73	5.75	25.15	12.78	18.86	20.24	21.33	2.89	
Total	657	592	657	633	670	644	668	665	647	667	633	657	7790

(Continued)

Figure 6-8a

HEIGHT DISTRIBUTION

San Clemente, CA (SAN RAOB Data) Range=175 NM Angle=0 DEG

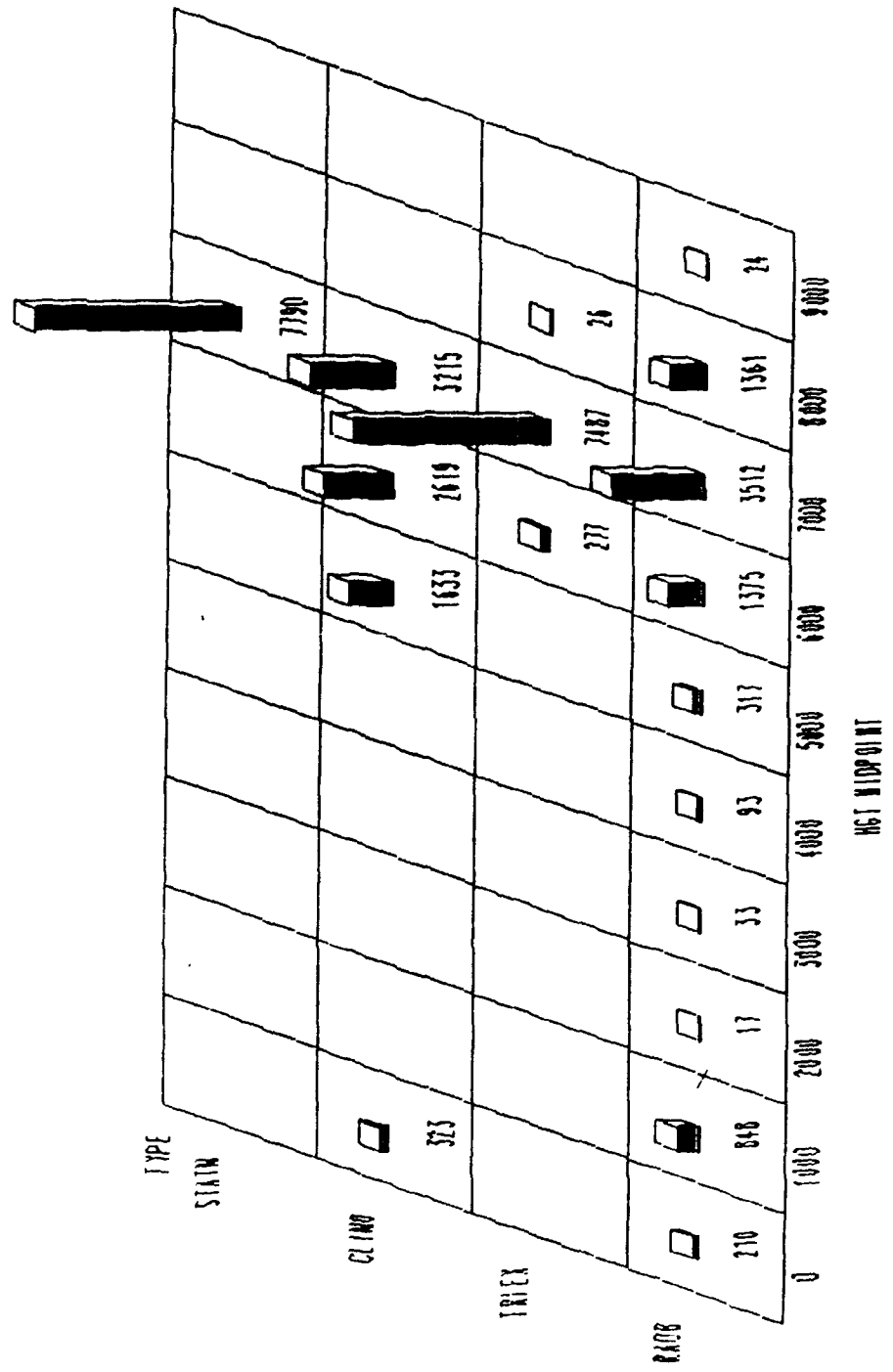


Figure 6-9

RMS ERRORS (meters) FOR
Paso Robles, CA (VBG RAOB Data)
Range=175 NM Angle=0 DEG

ENTIRE POR

TRIEXPONENTIAL	CLIMATOLOGY	STANDARD ATMOSPHERE
1306	1318	1308

RMS HEIGHT ERRORS FROM THE TRIEXPONENTIAL MODEL
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	945	774	1091
FEB	1405	1457	1352
MAR	1060	882	1208
APR	1378	1277	1472
MAY	1498	1266	1695
JUN	1403	1414	1391
JUL	1370	1515	1207
AUG	1562	1830	1233
SEP	1471	1490	1451
OCT	1277	1051	1474
NOV	1190	1394	950
DEC	953	788	1088

RMS HEIGHT ERRORS FROM CLIMATOLOGY
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	973	781	1133
FEB	1388	1424	1352
MAR	1052	878	1198
APR	1371	1258	1475
MAY	1488	1236	1701
JUN	1425	1435	1415
JUL	1403	1540	1250
AUG	1581	1826	1287
SEP	1488	1473	1503
OCT	1304	1075	1504
NOV	1202	1388	989
DEC	998	821	1141

Figure 7-1

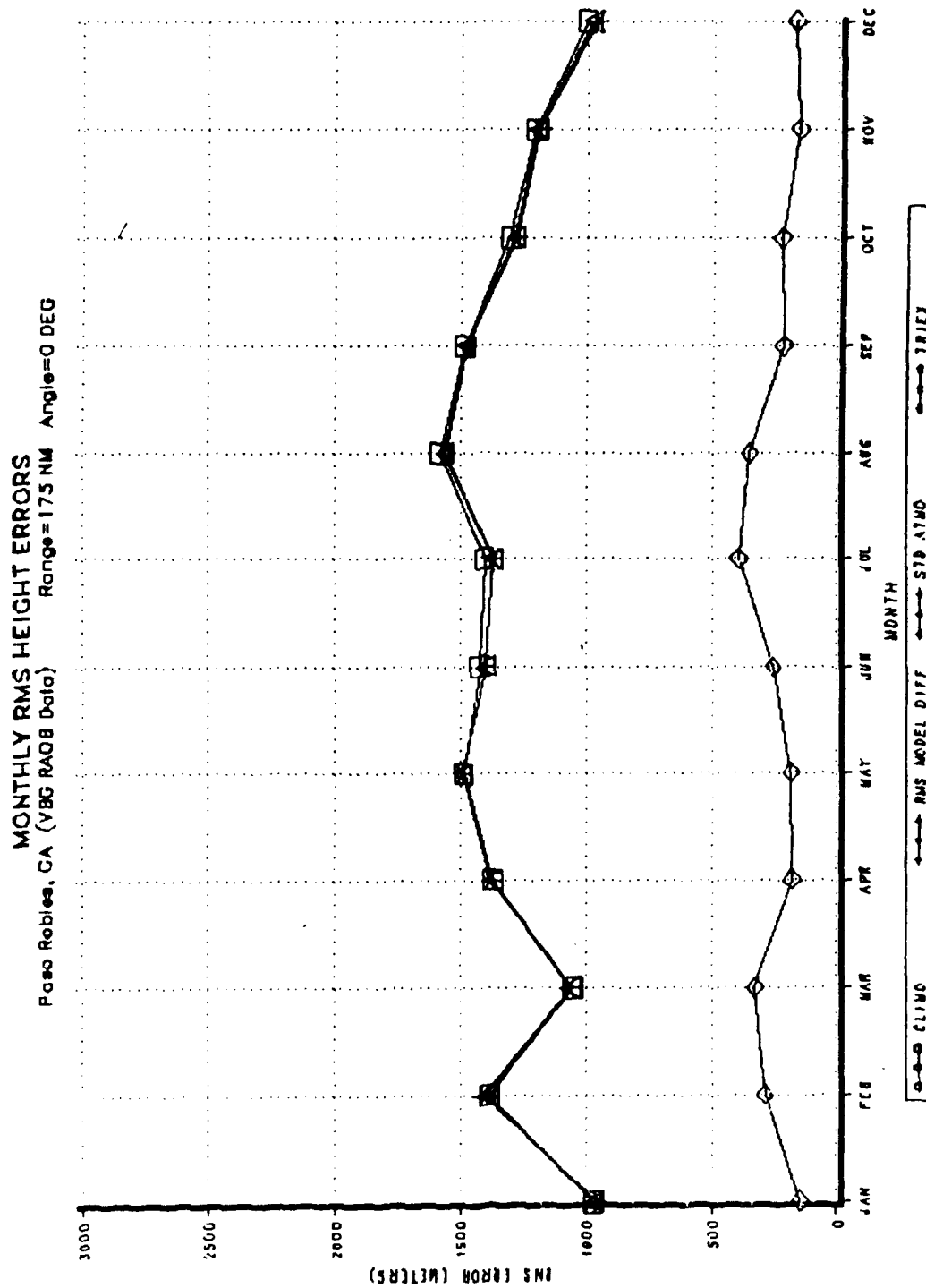


Figure 7-2

MONTHLY RMS HEIGHT ERRORS BY HOUR

Paso Robles, CA (VBG RADOB Data)
Range=173 NM Angle=0 DEO

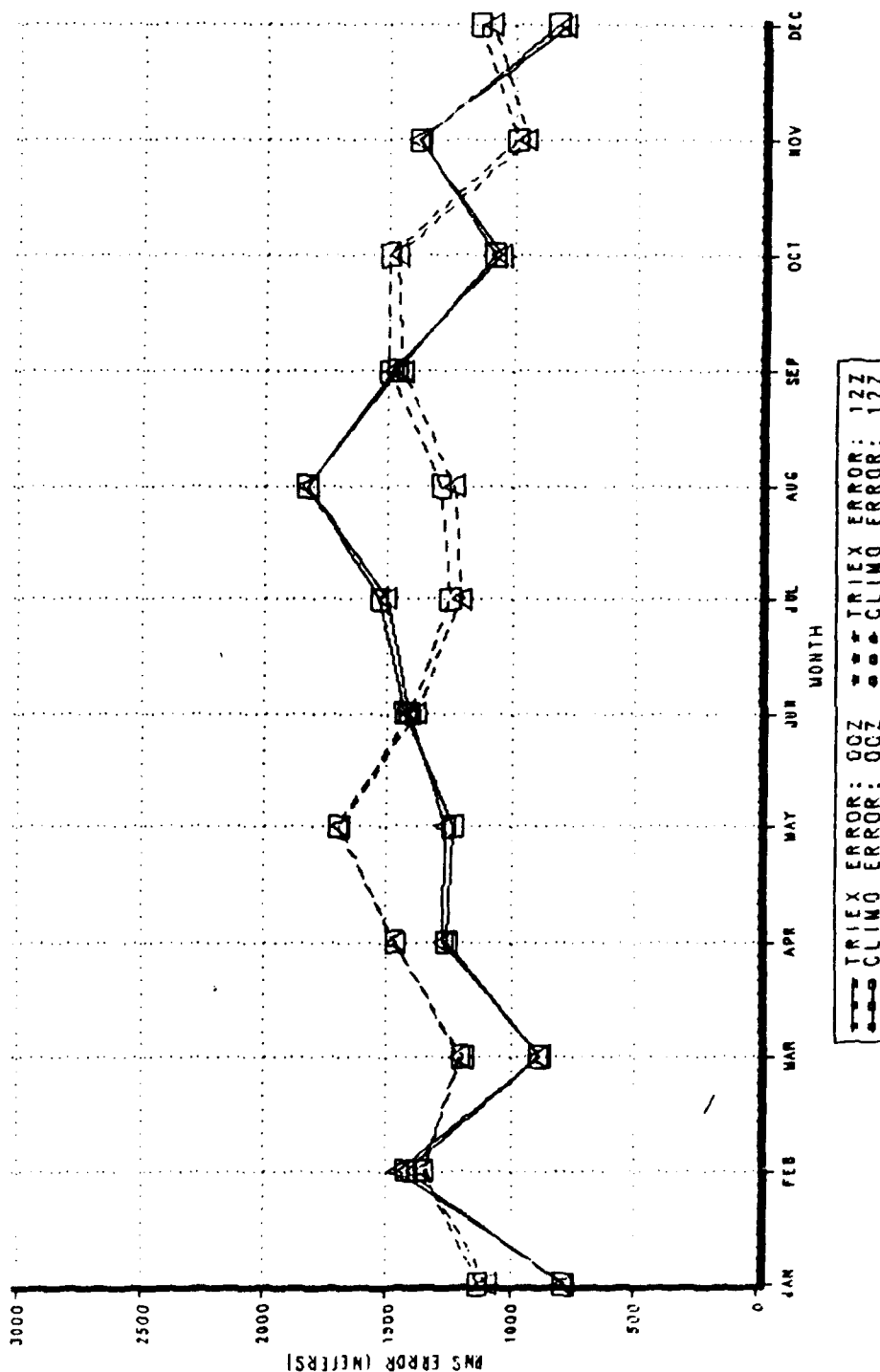


Figure 7-3

ERROR STATISTICS
Paso Robles, CA (VBG RAOB Data)
Range=175 NM Angle=0 DEG

MODEL	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
TRIEXPONENTIAL	163.64	1295.53	-2107.0	6755.1
CLIMATOLOGY	201.75	1302.85	-2097.3	6971.9
STANDARD ATMOSPHERE	139.50	1300.81	-1960.5	6808.4

Figure 7-4

TRIEXPONENTIAL MODEL ERRORS
Paso Robles, CA (VBG RAOB Data)
Range=175 NM Angle=0 DEG

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-2000	5	0.1	5	0.1
-1500	33	0.4	38	0.5
-1000	329	4.5	367	5.0
-500	2437	33.0	2804	38.0
0	2696	36.6	5500	74.6
500	1147	15.6	6647	90.1
1000	290	3.9	6937	94.0
1500	99	1.3	7036	95.4
2000	48	0.7	7084	96.0
2500	20	0.3	7104	96.3
3000	7	0.1	7111	96.4
3500	9	0.1	7120	96.5
4000	6	0.1	7126	96.6
4500	6	0.1	7132	96.7
5000	3	0.0	7135	96.7
5500	2	0.0	7137	96.8
6000	8	0.1	7145	96.9
6500	229	3.1	7374	100.0
7000	2	0.0	7376	100.0

CLIMATOLOGY ERRORS

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-2000	4	0.1	4	0.1
-1500	19	0.3	23	0.3
-1000	275	3.7	298	4.0
-500	2402	32.6	2700	36.6
0	2669	36.2	5369	72.8
500	1173	15.9	6542	88.7
1000	363	4.9	6905	93.6
1500	120	1.6	7025	95.2
2000	52	0.7	7077	95.9
2500	21	0.3	7098	96.2
3000	14	0.2	7112	96.4
3500	5	0.1	7117	96.5
4000	9	0.1	7126	96.6
4500	6	0.1	7132	96.7
5000	2	0.0	7134	96.7
5500	3	0.0	7137	96.8
6000	28	0.4	7165	97.1
6500	186	2.5	7351	99.7
7000	25	0.3	7376	100.0

Figure 7-5

HEIGHT ERROR DISTRIBUTION Poso Robles, GA (VBG RADAR Data) Range=175 NM Angle=0 DEG

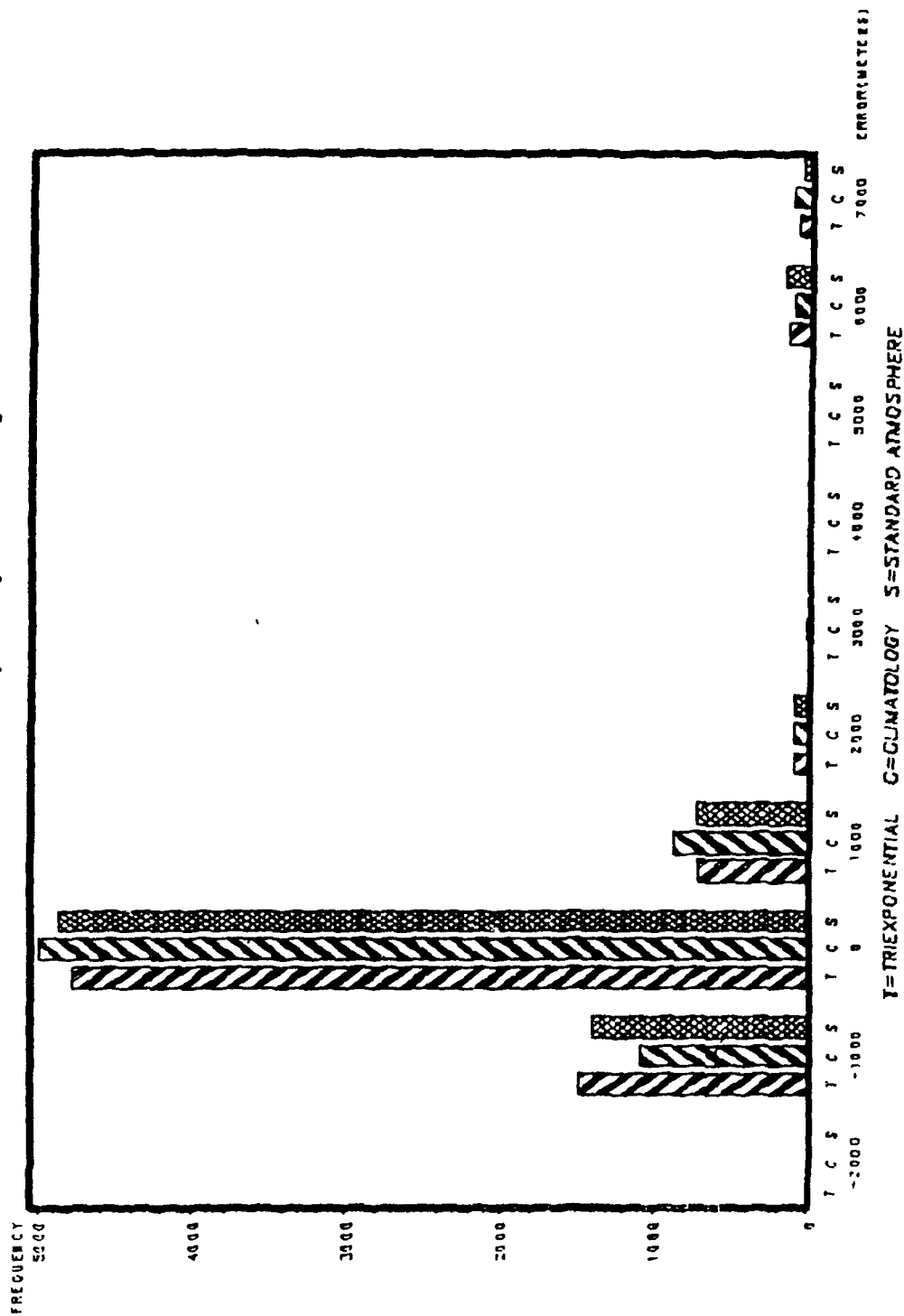


Figure 7-6

TRIEXPONENTIAL MODEL ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
-2000	0.00	0.00	0.00	0.16	0.00	0.33	0.00	0.16	0.17	0.00	0.00	0.00	
-1500	0.00	0.17	0.32	0.00	0.32	1.15	0.63	1.47	1.01	0.16	0.00	0.16	
-1000	1.56	2.04	1.12	2.42	3.23	7.73	10.60	9.49	7.21	4.45	1.83	1.92	
-500	23.79	28.28	18.75	25.60	32.42	43.91	48.26	47.79	36.58	42.01	25.96	23.64	
0	52.26	45.49	50.48	41.22	34.35	25.66	19.62	19.31	24.16	28.83	45.76	50.64	
500	16.02	14.14	20.83	18.84	16.13	11.68	11.08	10.47	17.11	15.49	17.64	17.09	
1000	3.42	3.75	3.37	4.83	4.84	3.45	3.48	3.44	5.70	4.45	3.33	3.19	
1500	0.62	1.02	1.76	1.61	2.74	0.66	1.27	1.64	1.68	0.66	1.83	0.64	
2000	0.31	0.51	0.96	0.97	0.65	0.66	0.63	0.82	1.34	0.16	0.50	0.32	
2500	0.16	0.34	0.16	0.16	0.16	0.66	0.47	0.16	0.34	0.16	0.17	0.32	
3000	0.00	0.00	0.00	0.00	0.48	0.16	0.16	0.00	0.17	0.00	0.00	0.16	
3500	0.16	0.00	0.16	0.00	0.16	0.16	0.16	0.00	0.00	0.33	0.17	0.16	
4000	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.16	0.34	0.16	0.00	0.16	
4500	0.00	0.17	0.00	0.32	0.00	0.00	0.00	0.33	0.17	0.00	0.00	0.00	
5000	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.16	0.00	0.00	0.17	0.00	
5500	0.00	0.00	0.00	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
6000	0.16	0.17	0.00	0.00	0.16	0.16	0.16	0.16	0.34	0.00	0.00	0.00	
6500	1.40	3.92	2.08	3.22	4.35	3.62	3.32	4.42	3.69	3.13	2.66	1.60	
7000	0.16	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Total	643	587	624	621	620	608	632	611	596	607	601	626	7376

Figure 7-7

CLIMATOLOGY ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
-2000	0.00	0.17	0.16	0.16	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.00	
-1500	0.00	0.17	0.32	0.00	0.48	0.66	0.32	0.65	0.50	0.00	0.00	0.00	
-1000	1.24	8.01	9.29	3.70	5.32	1.32	2.53	4.42	5.20	1.65	1.50	0.80	
-500	28.30	47.19	37.50	36.55	38.06	28.78	22.78	26.68	35.40	36.24	28.45	25.88	
0	44.01	28.79	36.54	34.78	30.97	39.47	44.46	39.28	24.16	28.34	40.60	41.53	
500	19.91	7.67	9.62	14.33	13.71	18.09	14.72	13.75	17.11	20.76	19.13	21.73	
1000	3.27	2.56	2.56	3.54	3.55	4.44	7.12	5.40	8.89	7.25	4.49	6.07	
1500	0.93	0.51	1.28	1.93	2.26	1.48	1.90	2.95	2.01	1.48	1.50	1.28	
2000	0.31	0.68	0.32	0.81	0.32	0.82	1.42	0.65	1.17	0.49	1.16	0.32	
2500	0.00	0.00	0.16	0.00	0.48	0.49	0.63	0.65	0.50	0.00	0.17	0.32	
3000	0.16	0.00	0.00	0.00	0.32	0.49	0.32	0.33	0.34	0.16	0.00	0.16	
3500	0.16	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.17	0.16	
4000	0.00	0.17	0.00	0.00	0.00	0.16	0.16	0.16	0.34	0.33	0.00	0.16	
4500	0.00	0.00	0.00	0.32	0.00	0.00	0.16	0.16	0.17	0.00	0.17	0.00	
5000	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	
5500	0.00	0.00	0.00	0.32	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	
6000	0.00	2.21	1.44	0.16	0.65	0.00	0.00	0.00	0.17	0.00	0.00	0.00	
6500	1.71	1.87	0.64	3.22	3.87	3.13	1.74	3.60	3.69	3.13	2.50	1.28	
7000	0.00	0.00	0.00	0.00	0.00	0.66	1.74	0.98	0.17	0.00	0.17	0.32	
Total	643	587	624	621	620	608	632	611	596	607	601	626	7376

Figure 7-8

HEIGHT DISTRIBUTION

Paso Robles, CA (VBG RAOB Data) Range = 175 NM Angle = 0 DEG

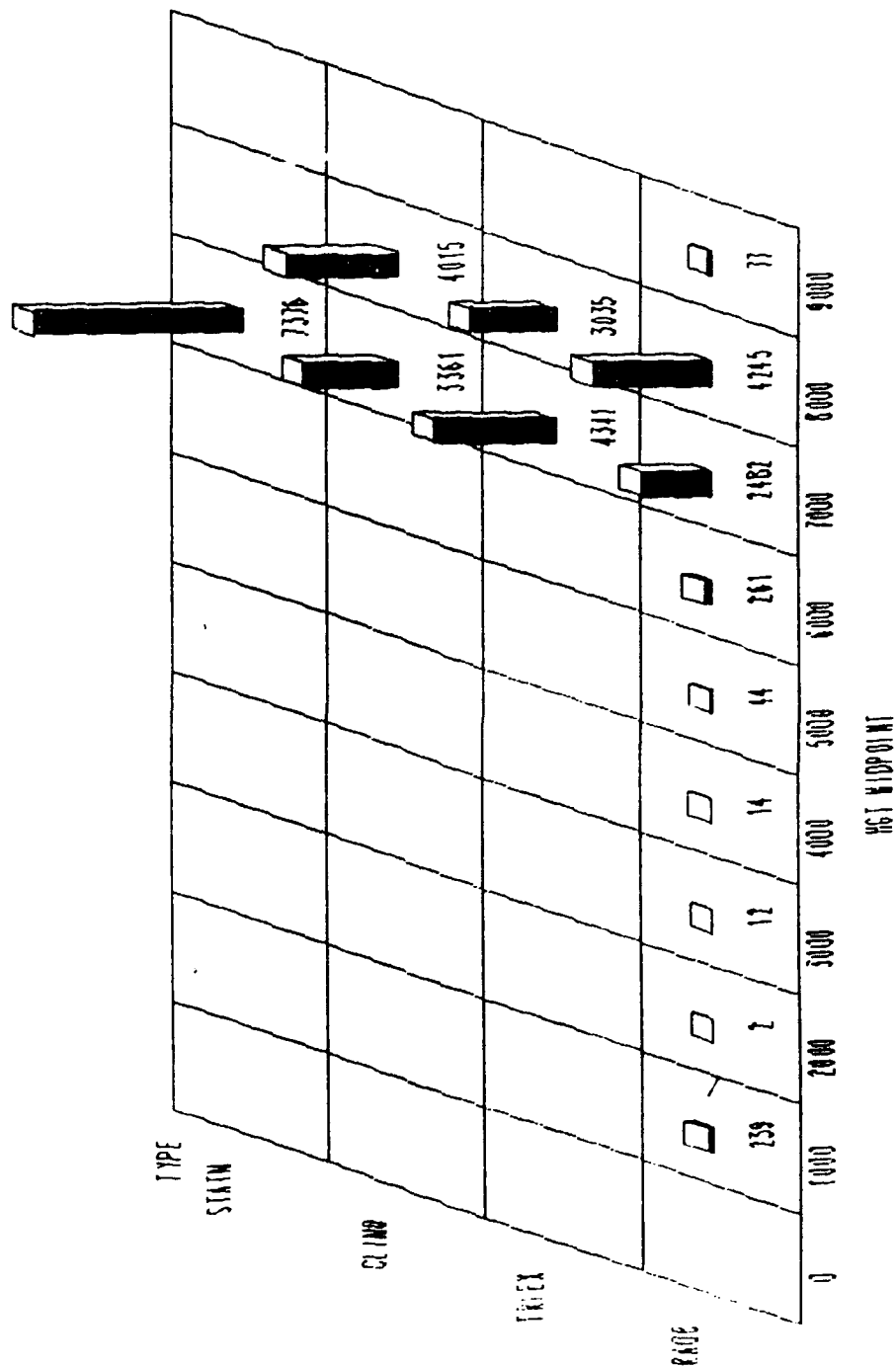


Figure 7-9

RMS ERRORS (meters) FOR
Crescent City, CA (MFR RAOB Data)
Range=175 NM Angle=0 DEG

ENTIRE POR

TRIEXPONENTIAL	CLIMATOLOGY	STANDARD ATMOSPHERE
2406	2289	2303

RMS HEIGHT ERRORS FROM THE TRIEXPONENTIAL MODEL
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	2439	2516	2360
FEB	2314	2322	2307
MAR	2254	2146	2358
APR	2651	2407	2878
MAY	2390	2073	2672
JUN	2038	1368	2535
JUL	2079	1278	2650
AUG	2176	1304	2787
SEP	2462	1751	3005
OCT	2603	2161	2981
NOV	2553	2359	2733
DEC	2780	3038	2497

RMS HEIGHT ERRORS FROM CLIMATOLOGY
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	2264	2257	2271
FEB	2227	2193	2261
MAR	2172	2047	2290
APR	2546	2351	2729
MAY	2331	2058	2578
JUN	2015	1434	2461
JUL	1979	1359	2450
AUG	2004	1323	2467
SEP	2296	1880	2639
OCT	2582	2114	2978
NOV	2434	2254	2602
DEC	2510	2607	2410

Figure 8-1

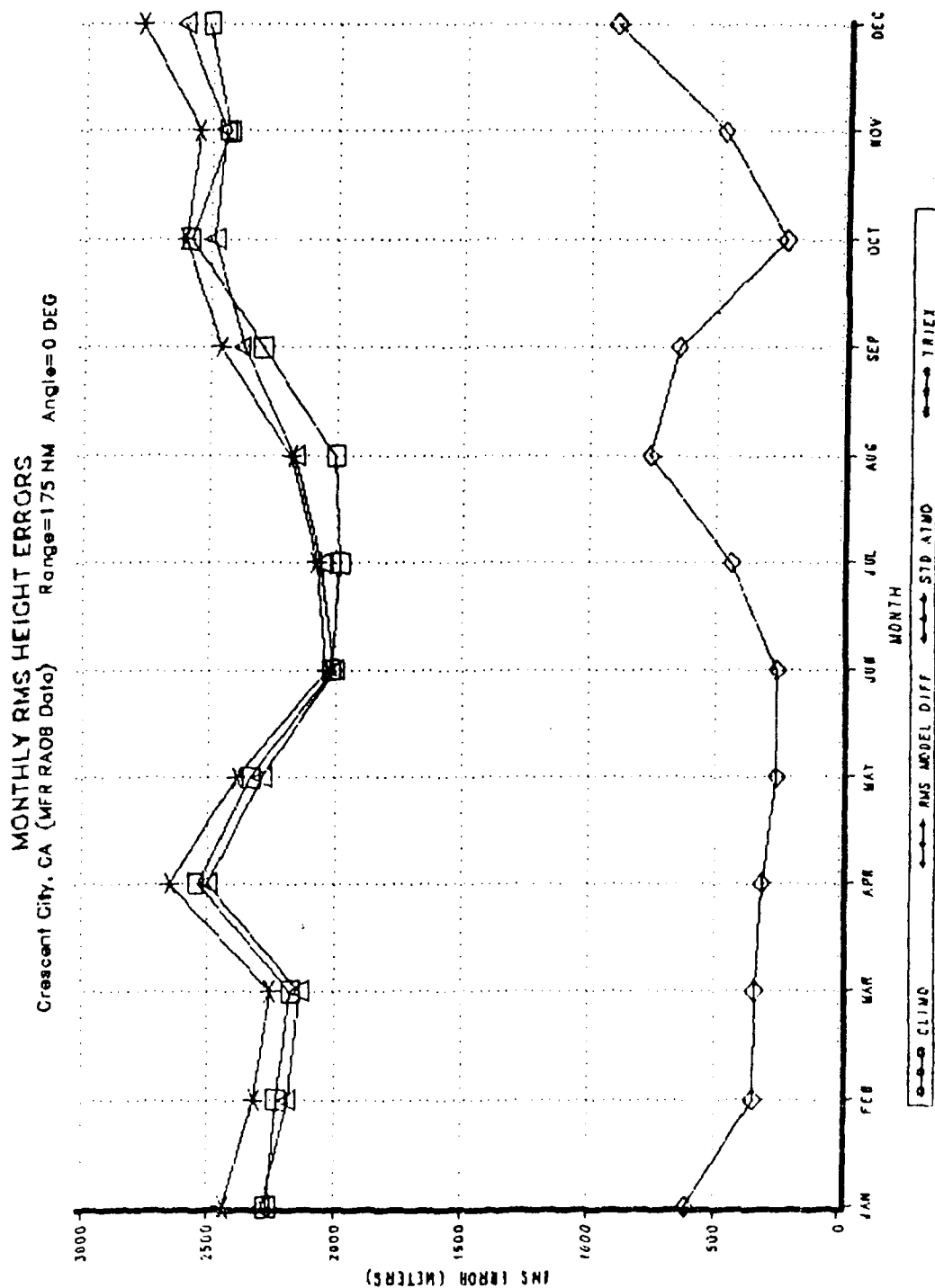


Figure 8-2

MONTHLY RMS HEIGHT ERRORS BY HOUR Crescent City, CA (MFR RA08 Data) Range=175 NM Angle=0 DEG

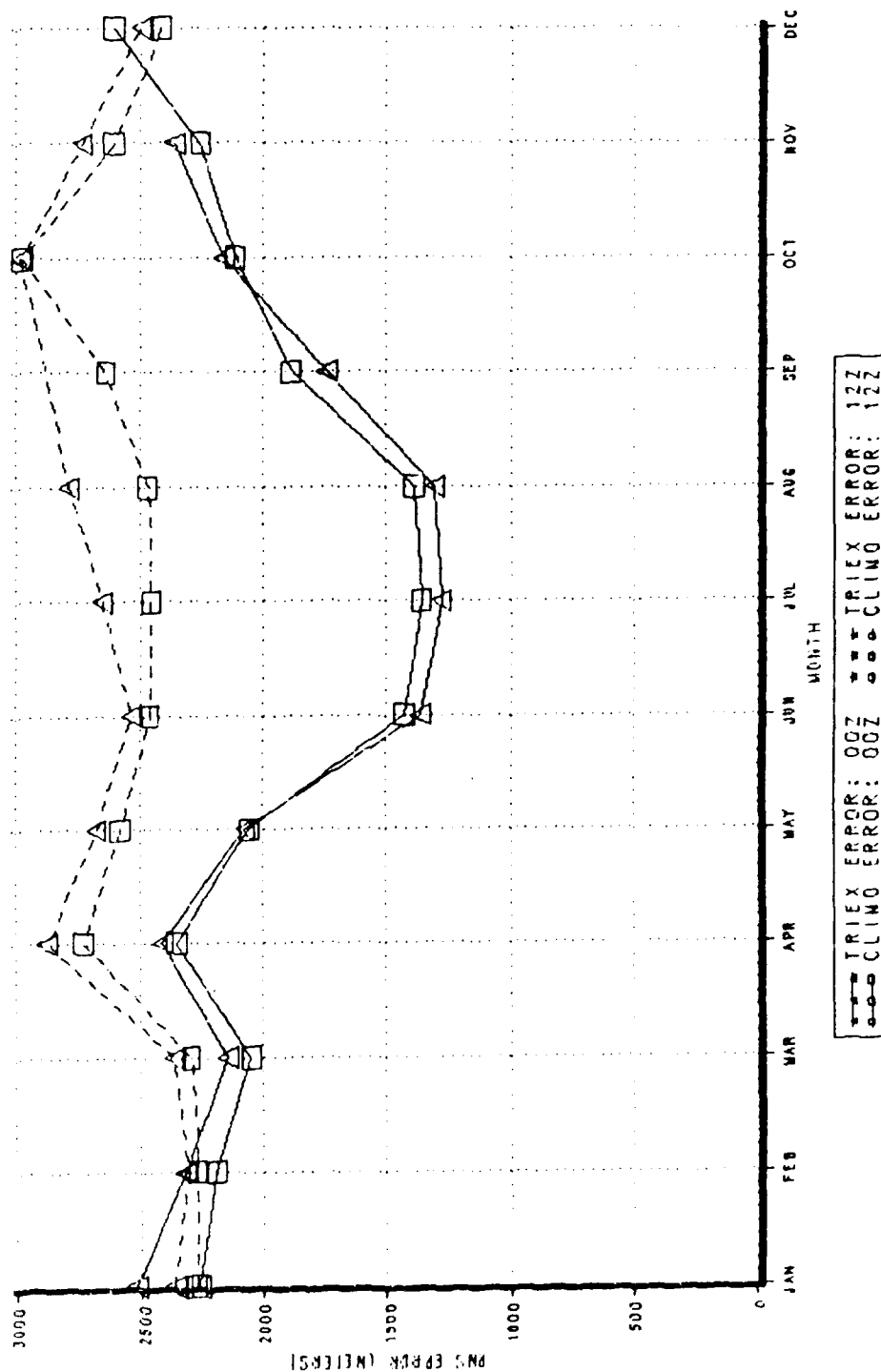


Figure 8-3

ERROR STATISTICS
Crescent City, CA (MFR RAOB Data)
Range=175 NM Angle=0 DEG

MODEL	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
TRIEXPONENTIAL	972.04	2200.93	-3324.2	6766.1
CLIMATOLOGY	670.61	2188.95	-3436.8	6699.6
STANDARD ATMOSPHERE	589.93	2226.54	-3565.9	5962.1

Figure 8-4

TRIEXPONENTIAL MODEL ERRORS
Crescent City, CA (MFR RAOB Data)
Range=175 NM Angle=0 DEG

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-3500	1	0.0	1	0.0
-3000	1	0.0	2	0.0
-2500	2	0.0	4	0.1
-2000	4	0.1	8	0.1
-1500	19	0.2	27	0.3
-1000	104	1.3	131	1.7
-500	1835	23.2	1966	24.8
0	2842	35.9	4808	60.7
500	1085	13.7	5893	74.4
1000	447	5.6	6340	80.1
1500	235	3.0	6575	83.0
2000	115	1.5	6690	84.5
2500	67	0.8	6757	85.3
3000	39	0.5	6796	85.8
3500	22	0.3	6818	86.1
4000	20	0.3	6838	86.4
4500	9	0.1	6847	86.5
5000	14	0.2	6861	86.7
5500	12	0.2	6873	86.8
6000	371	4.7	7244	91.5
6500	673	8.5	7917	100.0
7000	1	0.0	7918	100.0

CLIMATOLOGY ERRORS

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-3500	1	0.0	1	0.0
-3000	5	0.1	6	0.1
-2500	7	0.1	13	0.2
-2000	22	0.3	35	0.4
-1500	250	3.2	285	3.6
-1000	800	10.1	1085	13.7
-500	2319	29.3	3404	43.0
0	2023	25.5	5427	68.5
500	758	9.6	6185	78.1
1000	303	3.8	6488	81.9
1500	166	2.1	6654	84.0
2000	74	0.9	6728	85.0
2500	51	0.6	6779	85.6
3000	28	0.4	6807	86.0
3500	15	0.2	6822	86.2
4000	18	0.2	6840	86.4
4500	15	0.2	6855	86.6
5000	147	1.9	7002	88.4
5500	185	2.3	7187	90.8
6000	544	6.9	7731	97.6
6500	187	2.4	7918	100.0

Figure 8-5

HEIGHT ERROR DISTRIBUTION Crescent City, CA (MFR RA08 Data) Range=175 NM Angle=0 DEG

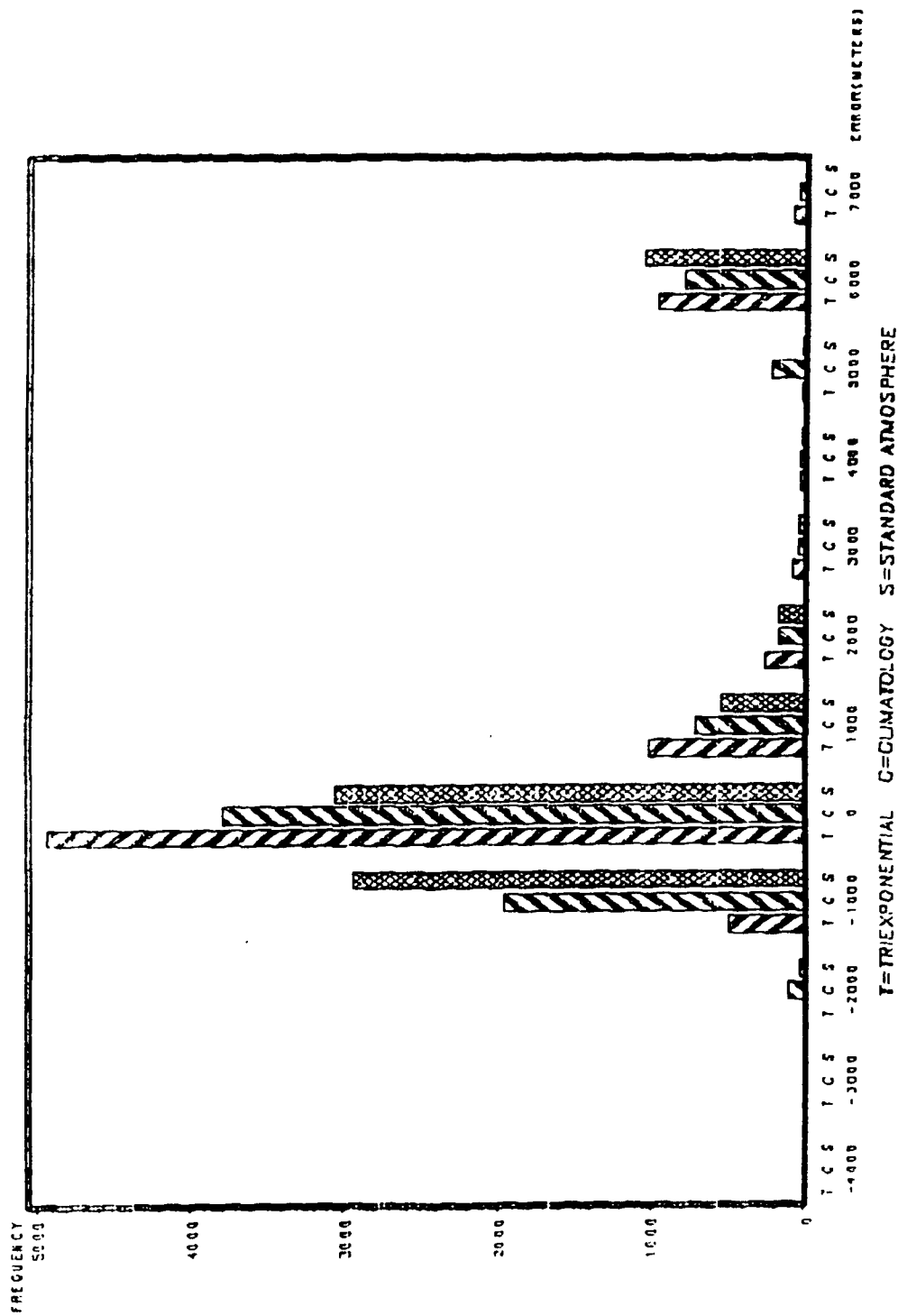


Figure 8-6

TRIEXPONENTIAL MODEL ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												Total
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
-3500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	
-3000	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	
-2500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.15	0.00	0.00	
-2000	0.00	0.00	0.00	0.30	0.00	0.16	0.00	0.00	0.00	0.00	0.15	0.00	
-1500	0.00	0.16	0.60	0.00	0.15	0.00	0.59	0.74	0.46	0.00	0.00	0.15	
-1000	0.30	0.99	0.60	0.15	1.34	2.02	1.92	2.23	1.68	2.39	1.70	0.45	
-500	10.81	13.46	16.84	17.68	21.55	37.07	41.86	34.67	29.27	24.03	20.12	10.27	
0	41.04	45.98	42.18	35.98	36.26	29.13	26.48	27.53	28.51	34.18	40.25	43.90	
500	19.85	15.44	15.20	14.94	13.82	10.59	9.32	10.86	11.43	14.18	13.00	15.77	
1000	8.15	5.58	6.86	6.86	5.94	5.45	3.55	5.65	5.79	3.58	5.26	5.06	
1500	2.67	3.12	3.43	3.51	3.42	3.12	2.51	2.68	3.20	2.99	1.86	3.13	
2000	2.07	0.82	0.89	0.91	2.08	0.93	1.92	2.08	2.13	1.04	0.93	1.49	
2500	0.74	0.82	0.45	1.83	1.04	0.93	0.74	0.74	1.68	0.45	0.31	0.45	
3000	0.30	0.66	0.45	0.46	0.59	0.31	0.59	0.45	0.76	0.30	0.31	0.74	
3500	0.15	0.16	0.15	0.61	0.15	0.16	0.15	0.60	0.61	0.15	0.15	0.30	
4000	0.15	0.49	0.75	0.30	0.00	0.16	0.00	0.30	0.46	0.15	0.15	0.15	
4500	0.15	0.16	0.30	0.30	0.15	0.00	0.00	0.00	0.00	0.15	0.15	0.00	
5000	0.15	0.16	0.15	0.46	0.30	0.16	0.44	0.00	0.15	0.15	0.00	0.00	
5500	0.00	0.00	0.00	0.30	0.59	0.16	0.00	0.00	0.30	0.45	0.00	0.00	
6000	1.93	1.97	1.94	3.20	4.01	5.92	7.10	9.38	7.77	5.07	5.42	2.38	
6500	11.56	10.02	9.24	12.20	8.62	3.58	2.81	1.79	5.79	10.45	10.22	15.77	
7000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	
Total	675	609	671	656	673	642	676	672	656	670	646	672	7918

Figure 8-7

CLIMATOLOGY ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												Total
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
-3500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	
-3000	0.00	0.00	0.00	0.30	0.00	0.00	0.00	0.15	0.00	0.15	0.15	0.00	
-2500	0.00	0.00	0.30	0.00	0.00	0.16	0.00	0.30	0.00	0.00	0.00	0.30	
-2000	0.15	0.16	0.15	0.00	0.00	0.00	0.00	1.79	0.30	0.00	0.31	0.45	
-1500	1.48	0.16	0.15	0.15	0.45	0.16	1.48	10.71	6.25	0.15	1.55	14.73	
-1000	18.67	6.57	7.60	4.73	4.46	2.96	12.28	11.61	13.72	4.18	19.81	14.29	
-500	27.11	32.02	38.15	39.33	38.04	28.97	26.18	14.58	14.33	32.39	39.78	21.13	
0	22.37	32.18	23.55	18.29	22.59	35.36	33.14	31.25	28.20	27.46	12.07	20.54	
500	10.52	8.54	10.28	9.76	10.55	12.15	8.14	9.82	11.89	11.34	6.50	5.36	
1000	3.11	3.61	4.62	4.42	4.90	4.67	4.44	3.72	4.57	3.43	2.01	2.38	
1500	1.63	2.13	1.04	2.90	1.93	3.12	1.92	3.13	2.74	2.39	1.08	1.19	
2000	0.30	0.36	1.04	1.83	1.78	1.40	0.30	0.74	1.22	1.04	0.15	0.74	
2500	0.59	0.82	0.15	0.61	1.04	0.78	1.18	0.45	0.91	0.60	0.31	0.30	
3000	0.15	0.33	0.60	0.61	0.45	0.16	0.44	0.00	0.91	0.15	0.31	0.15	
3500	0.00	0.00	0.60	0.46	0.00	0.16	0.15	0.15	0.30	0.30	0.15	0.00	
4000	0.30	0.66	0.45	0.15	0.15	0.16	0.00	0.15	0.46	0.00	0.15	0.15	
4500	0.15	0.16	0.15	0.61	0.30	0.16	0.30	0.15	0.15	0.15	0.00	0.00	
5000	0.00	0.00	0.00	0.30	0.15	0.16	0.15	9.67	0.30	0.30	0.00	10.86	
5500	7.11	0.00	0.00	0.30	0.74	0.16	8.28	0.00	10.67	0.30	0.15	0.00	
6000	6.37	11.99	11.18	9.60	8.47	7.48	0.00	0.00	0.00	5.37	15.48	7.29	
6500	0.00	0.00	0.00	5.64	4.01	1.87	1.63	1.64	3.05	10.30	0.00	0.00	
Total	675	609	671	656	673	642	676	672	656	670	646	672	7918

Figure 8-8

HEIGHT DISTRIBUTION

Crescent City, CA (MFR PAOB Data) Range = 175 NM Angle = 0 DEG

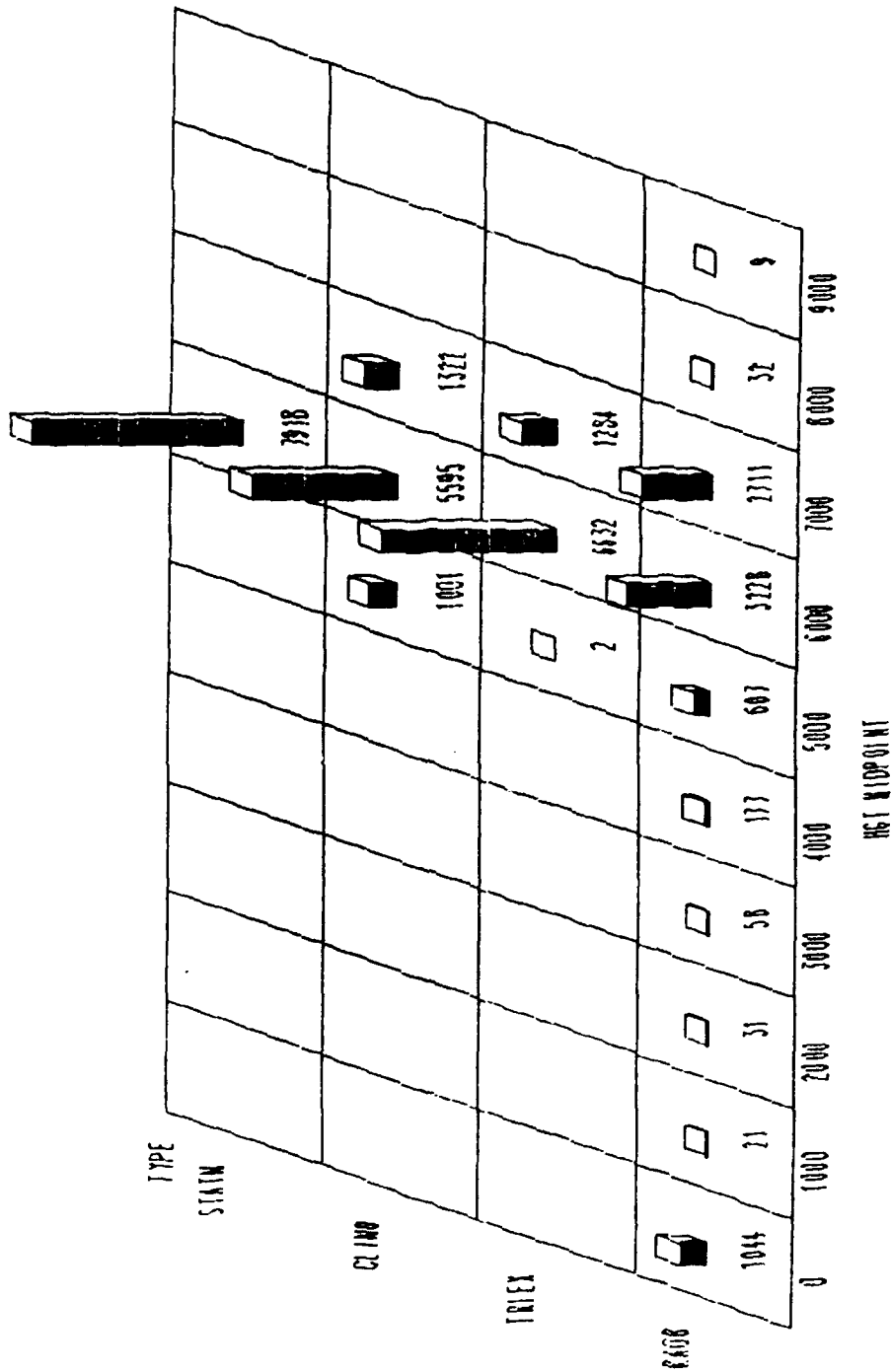


Figure 8-9

RMS ERRORS (meters) FOR
Jedburg, SC (CHS RAOB Data)
Range=175 NM Angle=0 DEG

ENTIRE FOR

TRIEXPONENTIAL	CLIMATOLOGY	STANDARD ATMOSPHERE
1982	1973	2012

RMS HEIGHT ERRORS FROM THE TRIEXPONENTIAL MODEL
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	1801	1482	2075
FEB	1934	1430	2333
MAR	2095	1370	2625
APR	2569	1680	3212
MAY	2190	1496	2702
JUN	1710	1374	1988
JUL	1683	1567	1792
AUG	1373	1177	1543
SEP	1454	1230	1647
OCT	2214	1839	2534
NOV	2059	1661	2391
DEC	2335	1983	2645

RMS HEIGHT ERRORS FROM CLIMATOLOGY
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	1752	1498	1976
FEB	1899	1471	2248
MAR	2023	1413	2486
APR	2394	1687	2928
MAY	2120	1548	2559
JUN	1836	1480	2130
JUL	1840	1710	1961
AUG	1403	1075	1666
SEP	1496	1265	1694
OCT	2249	1813	2615
NOV	2134	1675	2509
DC	2266	1907	2580

Figure 9-1

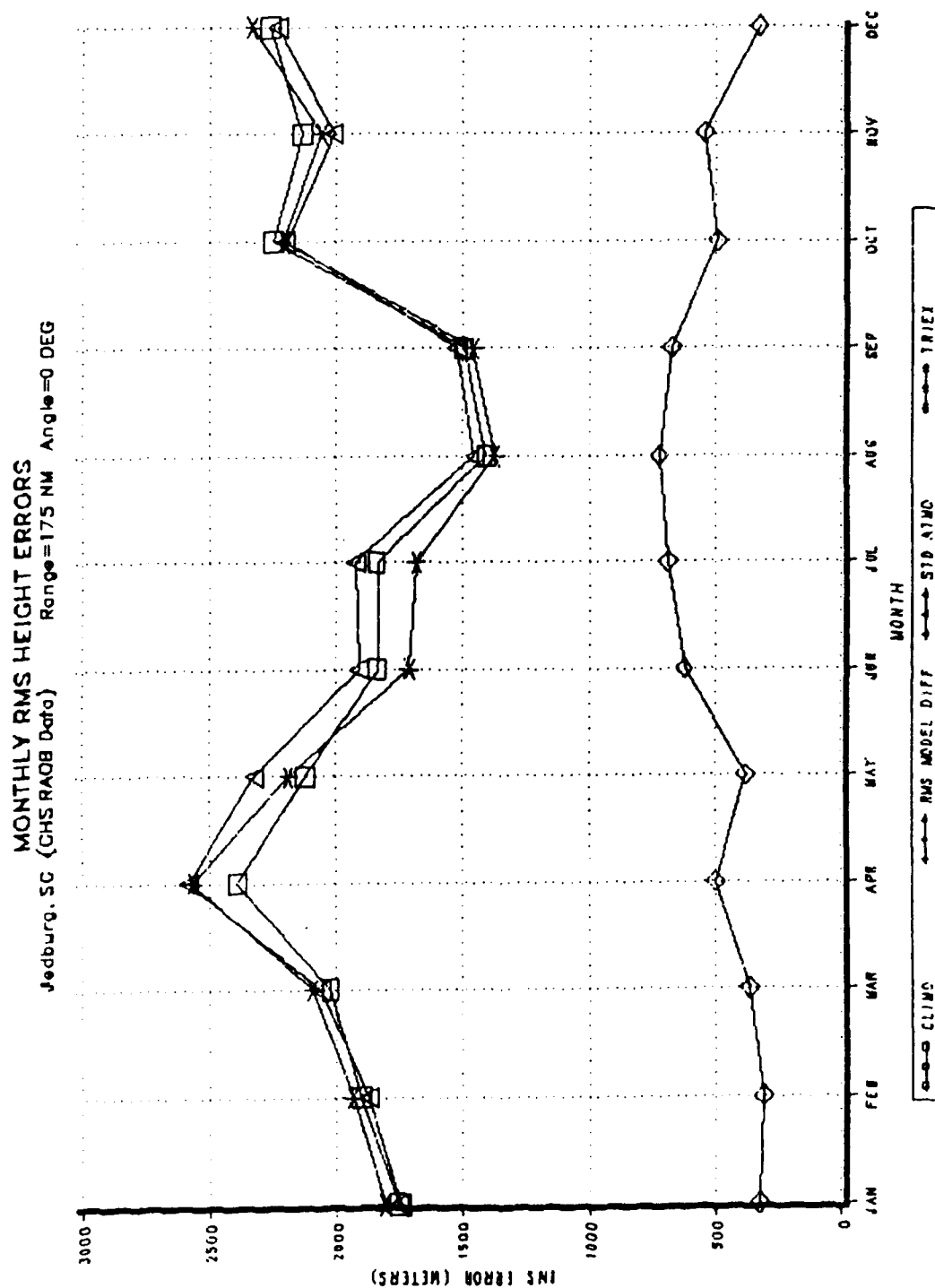


Figure 9-2

MONTHLY RMS HEIGHT ERRORS BY HOUR

Jedburg, SC (CHSRAOB Data)
Range=173 NM Angle=0 DEG

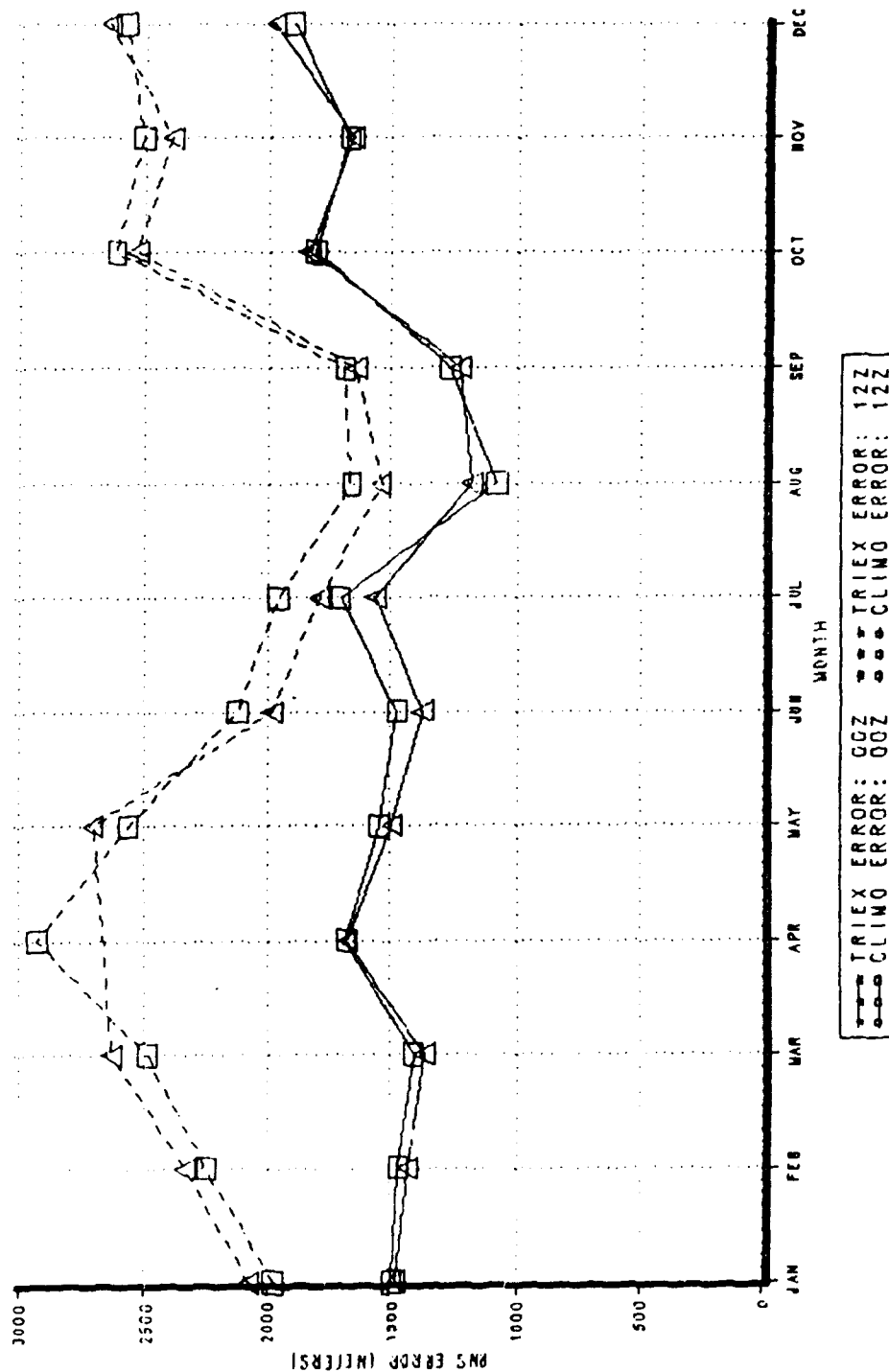


Figure 9-3

ERROR STATISTICS
Jedburg, SC (CHS RAOB Data)
Range=175 NM Angle=0 DEG

MODEL	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
TRIEXPONENTIAL	405.92	1940.14	-2968.7	6593.9
CLIMATOLOGY	611.05	1875.98	-3909.3	6389.6
STANDARD ATMOSPHERE	636.09	1908.65	-3786.4	5984.0

Figure 9-4

TRIEXPONENTIAL MODEL ERRORS
Jedburg, SC (CHS RAOB Data)
Range=175 NM Angle=0 DEG

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-3000	4	0.1	4	0.1
-2500	6	0.1	10	0.1
-2000	33	0.4	43	0.5
-1500	328	4.2	371	4.7
-1000	1240	15.8	1611	20.5
-500	2017	25.6	3628	46.1
0	1873	23.8	5501	69.9
500	843	10.7	6344	80.7
1000	370	4.7	6714	85.4
1500	161	2.0	6875	87.4
2000	111	1.4	6986	88.8
2500	51	0.6	7037	89.5
3000	30	0.4	7067	89.9
3500	20	0.3	7087	90.1
4000	17	0.2	7104	90.3
4500	21	0.3	7125	90.6
5000	111	1.4	7236	92.0
5500	150	1.9	7386	93.9
6000	314	4.0	7700	97.9
6500	165	2.1	7865	100.0

CLIMATOLOGY ERRORS

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-4000	3	0.0	3	0.0
-3500	3	0.0	6	0.1
-3000	3	0.0	9	0.1
-2500	7	0.1	16	0.2
-2000	26	0.3	42	0.5
-1500	93	1.2	135	1.7
-1000	588	7.5	723	9.2
-500	1997	25.4	2720	34.6
0	2170	27.6	4890	62.2
500	1161	14.8	6051	76.9
1000	543	6.9	6594	83.8
1500	234	3.0	6828	86.8
2000	123	1.6	6951	88.4
2500	65	0.8	7016	89.2
3000	39	0.5	7055	89.7
3500	27	0.3	7082	90.0
4000	15	0.2	7097	90.2
4500	10	0.1	7107	90.4
5000	21	0.3	7128	90.6
5500	255	3.2	7383	93.9
6000	394	5.0	7777	98.9
6500	88	1.1	7865	100.0

Figure 9-5

TRIEXPONENTIAL MODEL ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH													
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total	
-3000	0.00	0.00	0.00	0.00	0.15	0.16	0.00	0.00	0.00	0.30	0.00	0.00		
-2500	0.00	0.00	0.00	0.15	0.00	0.16	0.00	0.00	0.31	0.00	0.16	0.15		
-2000	0.15	0.33	0.15	0.00	0.30	1.10	0.45	1.06	0.61	0.60	0.16	0.15		
-1500	1.04	0.82	1.04	1.24	1.49	5.63	10.81	15.08	5.99	2.41	2.83	1.49		
-1000	6.22	6.87	7.26	7.88	13.30	23.00	27.33	28.66	27.96	16.59	14.29	9.72		
-500	21.63	23.57	28.10	22.10	24.66	29.26	24.92	26.70	32.72	25.19	25.27	23.77		
0	41.19	38.63	30.07	24.57	21.08	15.34	15.17	13.73	13.52	21.72	23.86	27.20		
500	13.78	11.78	12.00	13.91	12.86	7.82	6.61	4.98	7.37	10.41	12.56	14.50		
1000	5.04	4.09	5.78	5.56	5.98	5.01	2.40	2.26	3.84	5.13	6.59	4.78		
1500	1.48	2.78	2.67	3.25	2.84	1.25	1.50	1.51	0.77	2.41	1.57	2.54		
2000	1.48	0.92	1.48	2.01	2.09	1.56	1.20	0.60	1.09	1.66	1.57	1.20		
2500	0.30	0.82	0.30	0.77	0.75	1.10	0.60	0.90	0.46	0.45	0.47	0.90		
3000	0.15	0.49	0.15	0.62	0.60	0.31	0.30	0.45	0.31	0.45	0.31	0.45		
3500	0.15	0.49	0.30	0.00	0.45	0.16	0.45	0.15	0.30	0.30	0.16	0.45		
4000	0.00	0.00	0.15	0.62	0.45	0.31	0.30	0.15	0.00	0.60	0.00	0.00		
4500	0.00	0.00	0.00	0.15	0.30	0.47	1.65	0.45	0.15	0.00	0.00	0.00		
5000	0.00	0.00	0.00	0.62	1.35	3.44	5.71	2.87	2.61	0.15	0.15	0.00		
5500	0.00	0.16	1.33	4.33	6.13	3.60	0.60	0.45	1.23	2.41	1.80	0.75		
6000	1.26	3.60	6.22	10.16	5.23	0.31	0.00	0.00	1.08	3.45	5.14	4.04		
6500	4.15	4.58	3.11	1.85	0.00	0.00	0.00	0.00	0.00	0.75	2.83	7.92		
Total	675	611	675	647	669	639	666	663	651	663	637	669	7865	

Figure 9-7

CLIMATOLOGY ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												Total
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
-4000	0.00	0.00	0.00	0.15	0.15	0.16	0.00	0.00	0.00	0.00	0.00	0.00	
-3500	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.30	0.00	0.00	
-3000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.16	0.15	
-2500	0.15	0.49	0.00	0.00	0.30	0.00	0.00	0.00	0.15	0.00	0.00	0.00	
-2000	0.59	0.33	0.44	1.08	0.30	0.31	0.00	0.00	0.31	0.45	0.16	0.00	
-1500	0.44	0.49	1.63	3.55	1.94	0.94	0.75	0.90	1.08	0.75	0.31	1.35	
-1000	8.15	5.24	8.00	16.54	10.46	5.32	6.76	8.14	5.53	4.37	2.67	8.22	
-500	33.04	27.66	27.41	27.36	28.10	21.28	25.53	25.64	23.20	20.06	15.38	29.45	
0	32.89	34.37	30.52	17.31	19.73	27.70	25.68	30.17	30.26	28.21	27.63	26.91	
500	11.26	12.11	12.89	8.81	11.81	17.21	15.92	15.23	19.51	17.35	23.55	11.81	
1000	3.11	5.89	4.30	2.63	7.03	9.70	9.16	7.84	7.83	9.50	11.77	4.33	
1500	1.63	2.78	2.22	2.63	2.69	4.07	3.60	3.02	4.30	2.56	4.40	1.94	
2000	0.74	0.49	0.89	1.24	1.94	2.66	1.20	2.11	1.38	1.96	2.67	1.49	
2500	0.44	0.82	0.44	0.46	1.49	0.78	0.90	1.51	0.46	1.06	0.78	0.75	
3000	0.00	0.49	0.15	0.46	0.15	1.10	1.05	0.60	0.77	0.60	0.00	0.60	
3500	0.15	0.49	0.44	0.31	0.75	0.00	0.60	0.45	0.15	0.30	0.16	0.30	
4000	0.00	0.00	0.00	0.31	0.30	0.47	0.60	0.45	0.00	0.00	0.16	0.00	
4500	0.00	0.00	0.00	0.31	0.30	0.16	0.15	0.00	0.00	0.45	0.16	0.00	
5000	0.00	0.00	0.00	1.39	0.90	0.31	0.15	0.30	0.00	0.15	0.00	0.00	
5500	0.00	0.00	1.93	12.36	9.27	5.63	4.95	0.75	3.53	0.15	0.16	0.15	
6000	5.04	6.06	6.67	3.09	2.39	2.03	3.00	2.87	1.54	11.61	2.98	12.56	
6500	2.37	2.29	2.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.91	0.00	
Total	675	611	675	647	669	639	666	663	651	663	637	669	7865

Figure 9-8

HEIGHT DISTRIBUTION

Jedburgh, SC (CHS RAOB Data) Range=175 NM Angle=0 DEG

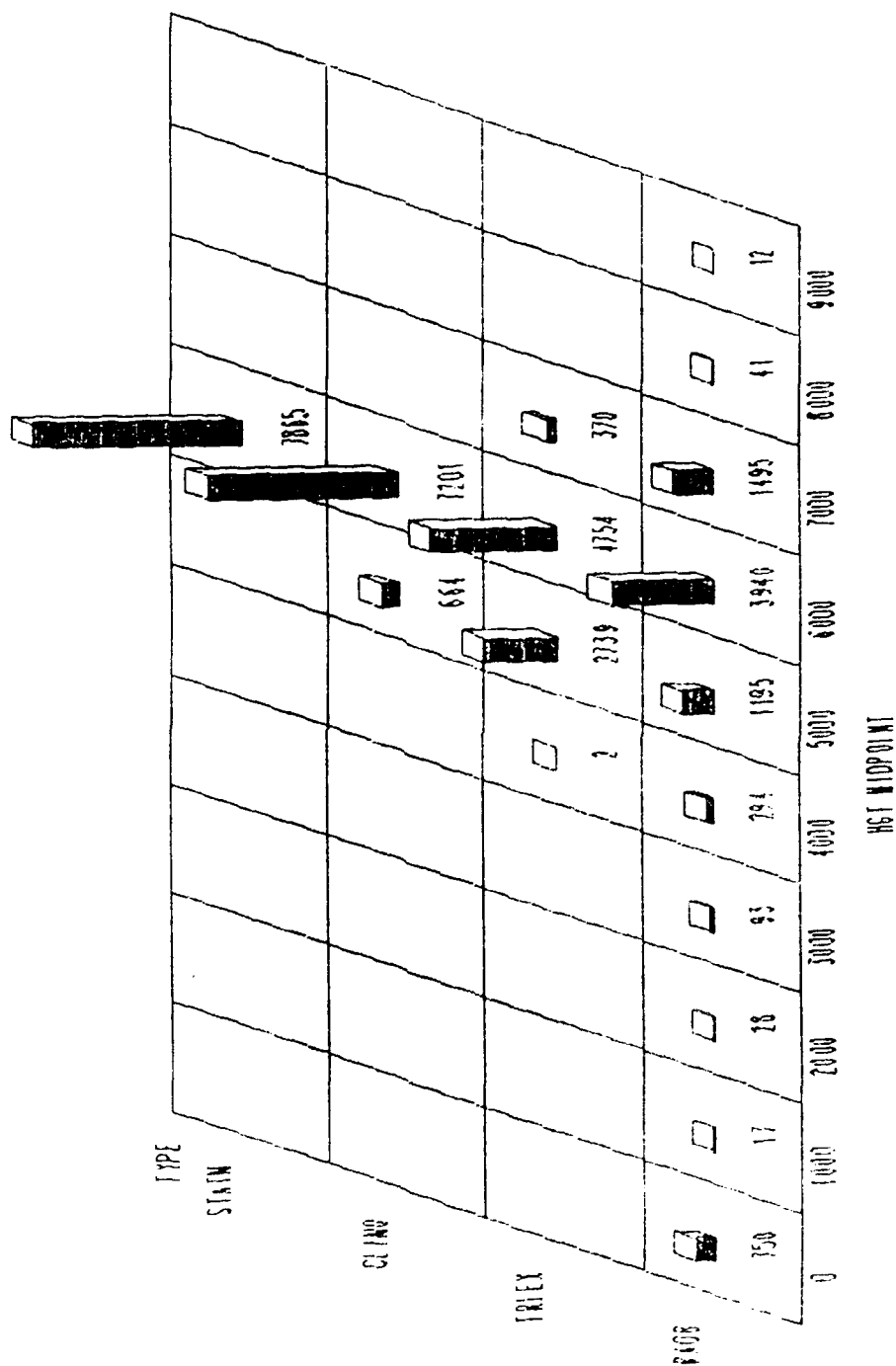


Figure 9-9

RMS ERRORS (meters) FOR
Mt Santa Rosa, Guam (PGAC RAOB Data)
Range=175 NM Angle=0 DEG

ENTIRE POR

TRIEXPONENTIAL	CLIMATOLOGY	STANDARD ATMOSPHERE
629	626	950

RMS HEIGHT ERRORS FROM THE TRIEXPONENTIAL MODEL
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	531	534	528
FEB	514	596	413
MAR	463	427	495
APR	473	519	421
MAY	658	657	658
JUN	698	779	607
JUL	750	697	800
AUG	597	652	536
SEP	746	739	752
OCT	744	600	865
NOV	635	562	701
DEC	640	615	666

RMS HEIGHT ERRORS FROM CLIMATOLOGY
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	543	556	529
FEB	549	657	408
MAR	449	404	489
APR	449	461	437
MAY	634	594	672
JUN	700	736	662
JUL	726	641	803
AUG	595	611	578
SEP	719	690	747
OCT	733	592	853
NOV	657	592	717
DEC	668	641	695

Figure 10-1

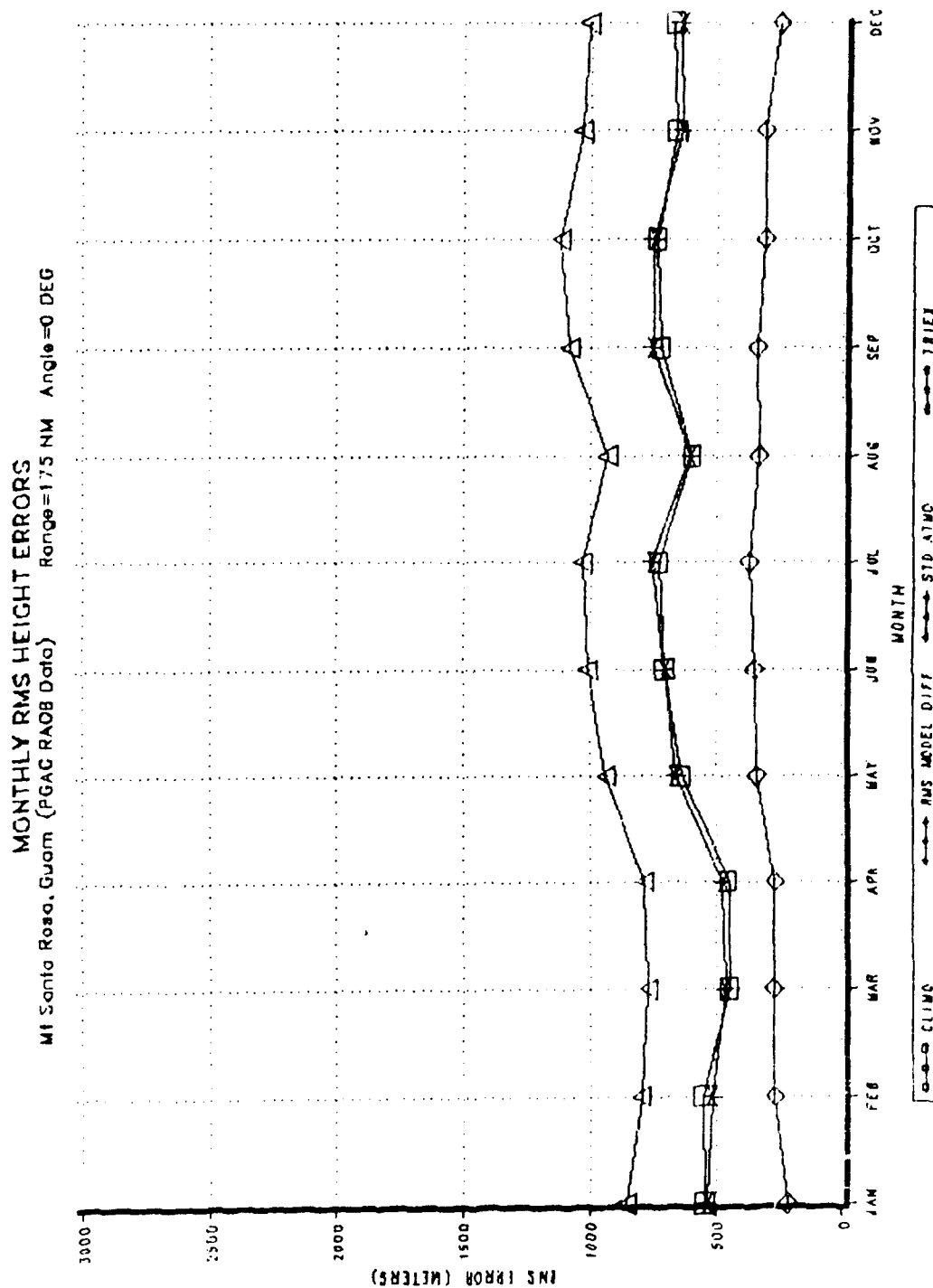


Figure 10-2

MONTHLY RMS HEIGHT ERRORS BY HOUR

MI Santa Rosa, Guam (PGAC RAOB Data)
Range=173 NM Angle=0 DEG

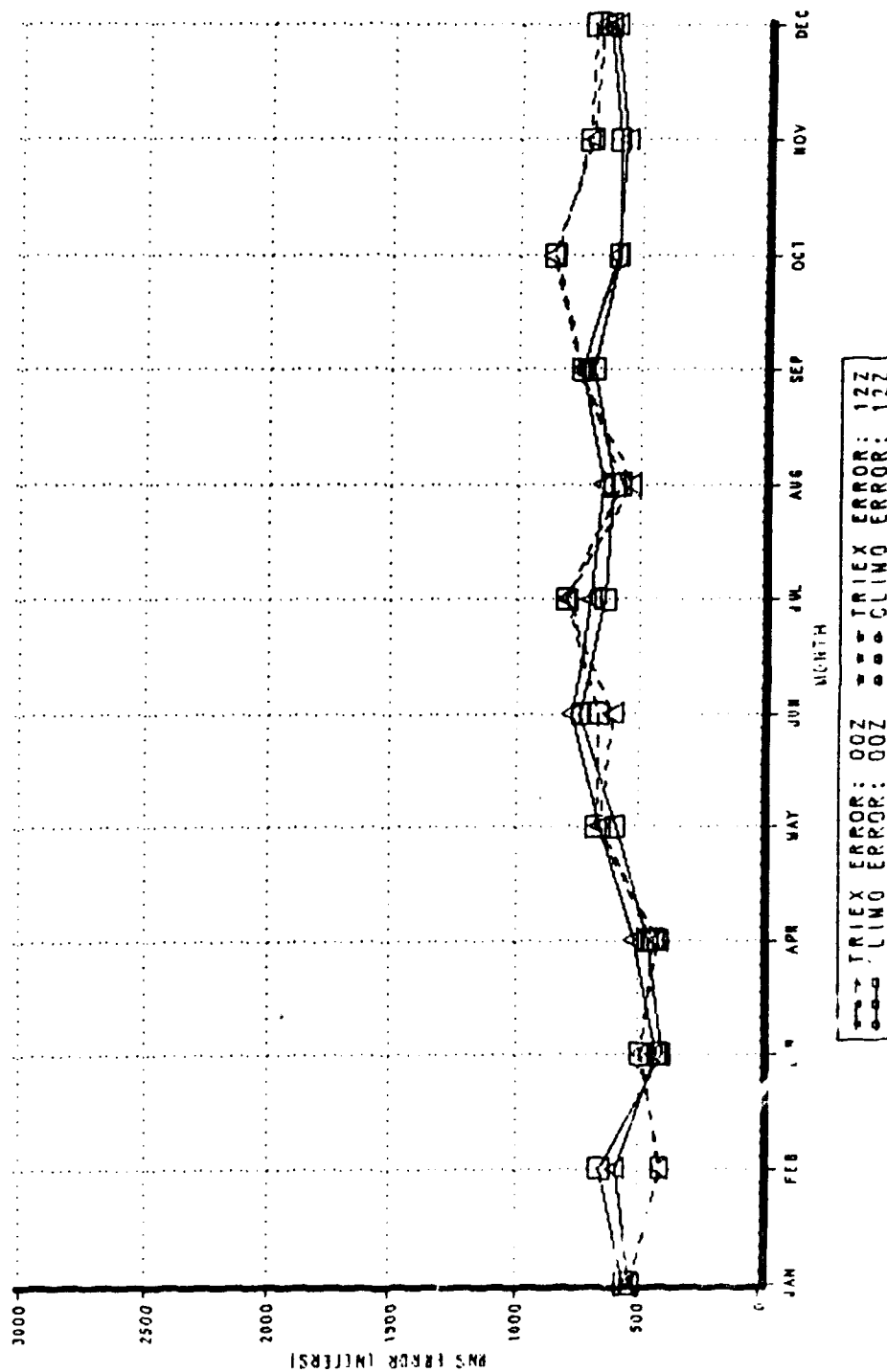


Figure 10-3

ERROR STATISTICS
 Mt Santa Rosa, Guam (PGAC RAOB Data)
 Range=175 NM Angle=0 DEG

MODEL	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
TRIEXPONENTIAL	-134.57	614.60	-2044.1	5536.9
CLIMATOLOGY	63.39	623.08	-3536.2	5655.3
STANDARD ATMOSPHERE	708.23	633.78	-2878.1	6132.0

Figure 10-4

TRIEXPONENTIAL MODEL ERRORS
Mt Santa Rosa, Guam (PGAC RAOBData)
Range=175 NM Angle=0 DEG

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-2000	8	0.1	8	0.1
-1500	17	0.2	25	0.3
-1000	291	3.7	316	4.0
-500	3526	45.0	3842	49.0
0	2931	37.4	6773	86.4
500	696	8.9	7469	95.3
1000	188	2.4	7657	97.7
1500	75	1.0	7732	98.7
2000	30	0.4	7762	99.1
2500	20	0.3	7782	99.3
3000	3	0.0	7785	99.4
3500	3	0.0	7788	99.4
4000	2	0.0	7790	99.4
4500	3	0.0	7793	99.5
5000	38	0.5	7831	99.9
5500	4	0.1	7835	100.0

CLIMATOLOGY ERRORS

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-3500	4	0.1	4	0.1
-3000	3	0.0	7	0.1
-2500	1	0.0	8	0.1
-2000	6	0.1	14	0.2
-1500	5	0.1	19	0.2
-1000	103	1.3	122	1.6
-500	1806	23.1	1928	24.6
0	4005	51.1	5933	75.7
500	1382	17.6	7315	93.4
1000	303	3.9	7618	97.2
1500	92	1.2	7710	98.4
2000	43	0.5	7753	99.0
2500	22	0.3	7775	99.2
3000	9	0.1	7784	99.3
3500	2	0.0	7786	99.4
4000	3	0.0	7789	99.4
4500	2	0.0	7791	99.4
5000	18	0.2	7809	99.7
5500	26	0.3	7835	100.0

Figure 10-5

HEIGHT ERROR DISTRIBUTION
 Mt Santa Rosa, Guam (PGAG RA08 Data) Range=175 NM Angle=0 DEG

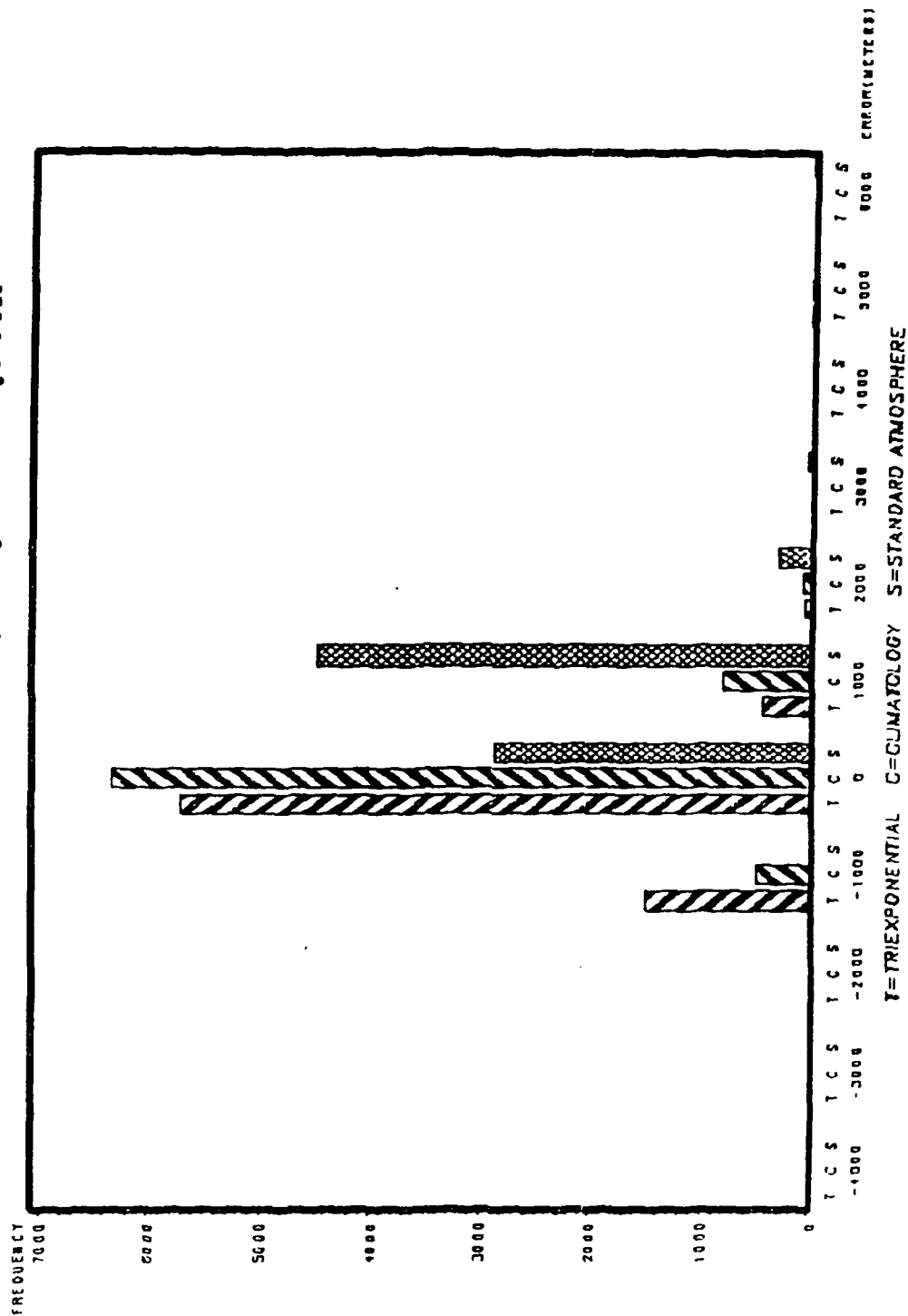


Figure 10-6

TRIEXPONENTIAL MODEL ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
-2000	0.00	0.00	0.00	0.00	0.15	0.31	0.15	0.15	0.15	0.00	0.16	0.15	
-1500	0.00	0.17	0.00	0.00	0.15	0.46	0.46	0.61	0.46	0.15	0.16	0.00	
-1000	1.19	1.49	1.79	2.78	4.69	5.57	5.93	4.90	5.85	4.41	3.42	2.53	
-500	36.01	42.88	38.42	40.74	47.05	47.99	53.19	52.22	50.77	45.66	45.19	40.27	
0	45.39	42.38	44.39	44.75	36.16	32.97	29.33	30.93	28.92	33.94	36.49	43.09	
500	11.90	9.60	12.11	8.49	7.11	8.67	6.84	7.20	6.62	9.13	10.09	8.77	
1000	3.42	2.15	1.94	1.70	2.72	1.55	1.37	2.14	3.23	3.96	2.17	2.38	
1500	1.34	0.50	0.75	1.23	0.76	0.93	0.76	0.77	1.38	0.76	0.93	1.34	
2000	0.15	0.17	0.45	0.15	0.15	0.46	0.46	0.31	1.08	0.46	0.16	0.59	
2500	0.15	0.33	0.00	0.00	0.15	0.15	0.30	0.46	0.31	0.46	0.62	0.15	
3000	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.31	0.00	0.00	0.00	
3500	0.15	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.15	0.00	0.00	0.00	
4000	0.00	0.00	0.00	0.00	0.00	0.15	0.15	0.00	0.00	0.00	0.00	0.00	
4500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.31	0.00	0.16	0.00	
5000	0.30	0.33	0.15	0.15	0.30	0.62	0.91	0.31	0.46	1.07	0.47	0.74	
5500	0.00	0.00	0.00	0.00	0.30	0.15	0.15	0.00	0.00	0.00	0.00	0.00	
Total	672	604	669	648	661	646	658	653	650	657	644	673	7835

Figure 10-7

CLIMATOLOGY ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR		MONTH												Total
Col	Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
	-3500	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.15	0.00	0.00	0.16	0.15	
	-3000	0.00	0.17	0.00	0.00	0.00	0.15	0.00	0.15	0.00	0.00	0.00	0.00	
	-2500	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	-2000	0.00	0.00	0.00	0.00	0.15	0.15	0.00	0.31	0.15	0.00	0.16	0.00	
	-1500	0.00	0.00	0.00	0.00	0.15	0.00	0.15	0.15	0.00	0.30	0.00	0.00	
	-1000	1.93	1.32	0.45	0.31	0.76	0.62	1.06	1.53	2.31	3.96	0.78	0.74	
	-500	25.15	19.87	20.18	21.76	20.27	22.91	21.28	27.72	26.31	29.22	17.86	23.77	
	0	50.15	53.48	52.47	56.17	55.22	50.93	51.22	48.39	48.00	43.53	53.73	50.37	
	500	16.07	19.04	21.08	17.28	16.94	19.04	19.91	15.93	14.92	4.00	18.94	18.57	
	1000	4.02	4.30	4.78	2.78	3.48	3.41	3.65	3.52	4.46	5.02	4.50	2.53	
	1500	1.79	0.83	0.15	0.93	1.51	0.62	0.76	0.92	1.08	1.67	2.02	1.78	
	2000	0.30	0.17	0.60	0.62	0.30	0.77	0.30	0.61	0.62	1.07	0.47	0.74	
	2500	0.15	0.17	0.15	0.00	0.30	0.31	0.15	0.15	0.92	0.00	0.62	0.45	
	3000	0.00	0.17	0.00	0.00	0.15	0.00	0.30	0.15	0.15	0.15	0.16	0.15	
	3500	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	
	4000	0.00	0.00	0.00	0.00	0.15	0.15	0.00	0.00	0.15	0.00	0.00	0.00	
	4500	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.15	0.00	0.00	0.00	
	5000	0.15	0.00	0.15	0.00	0.15	0.31	0.30	0.00	0.15	0.91	0.16	0.45	
	5500	0.15	0.33	0.00	0.15	0.45	0.46	0.76	0.31	0.46	0.15	0.47	0.30	
Total		672	604	669	648	661	646	658	653	650	657	644	673	
														7835

Figure 10-8

HEIGHT DISTRIBUTION

Mt Santa Rosa, Guam (PGAC RAOB Data) Range = 175 NM Angle = 0 DEG

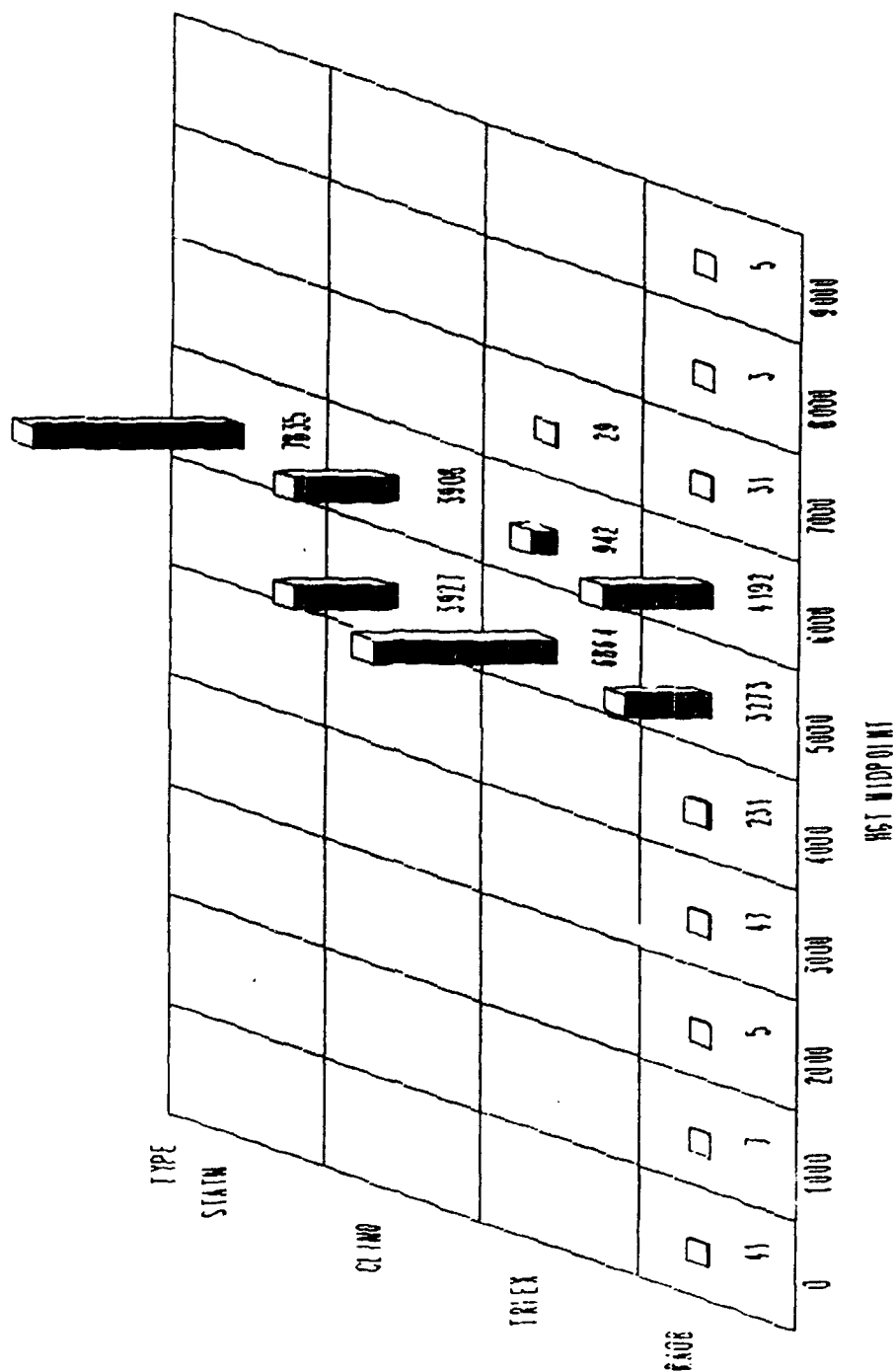


Figure 10-9

RMS ERRORS (meters) FOR
Tyndall, FL (AQQ RAOB Data)
Range=175 NM Angle=0 DEG

ENTIRE POR

TRIEXPONENTIAL	CLIMATOLOGY	STANDARD ATMOSPHERE
1882	1866	1892

RMS HEIGHT ERRORS FROM THE TRIEXPONENTIAL MODEL
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	1729	1407	2002
FEB	2059	1561	2460
MAR	1871	1534	2155
APR	2626	2146	3024
MAY	1804	1515	2051
JUN	1701	1534	1851
JUL	1445	1281	1596
AUG	1488	1428	1546
SEP	1531	1305	1727
OCT	2096	2259	1921
NOV	2029	2177	1916
DEC	1926	2020	1827

RMS HEIGHT ERRORS FROM CLIMATOLOGY
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	1695	1361	1975
FEB	1965	1499	2343
MAR	1853	1522	2132
APR	2471	1968	2881
MAY	1857	1523	2137
JUN	1757	1570	1924
JUL	1396	1233	1545
AUG	1416	1401	1431
SEP	1566	1290	1799
OCT	2071	2143	1997
NOV	2137	2132	2142
DEC	1956	1986	1925

Figure 11-1

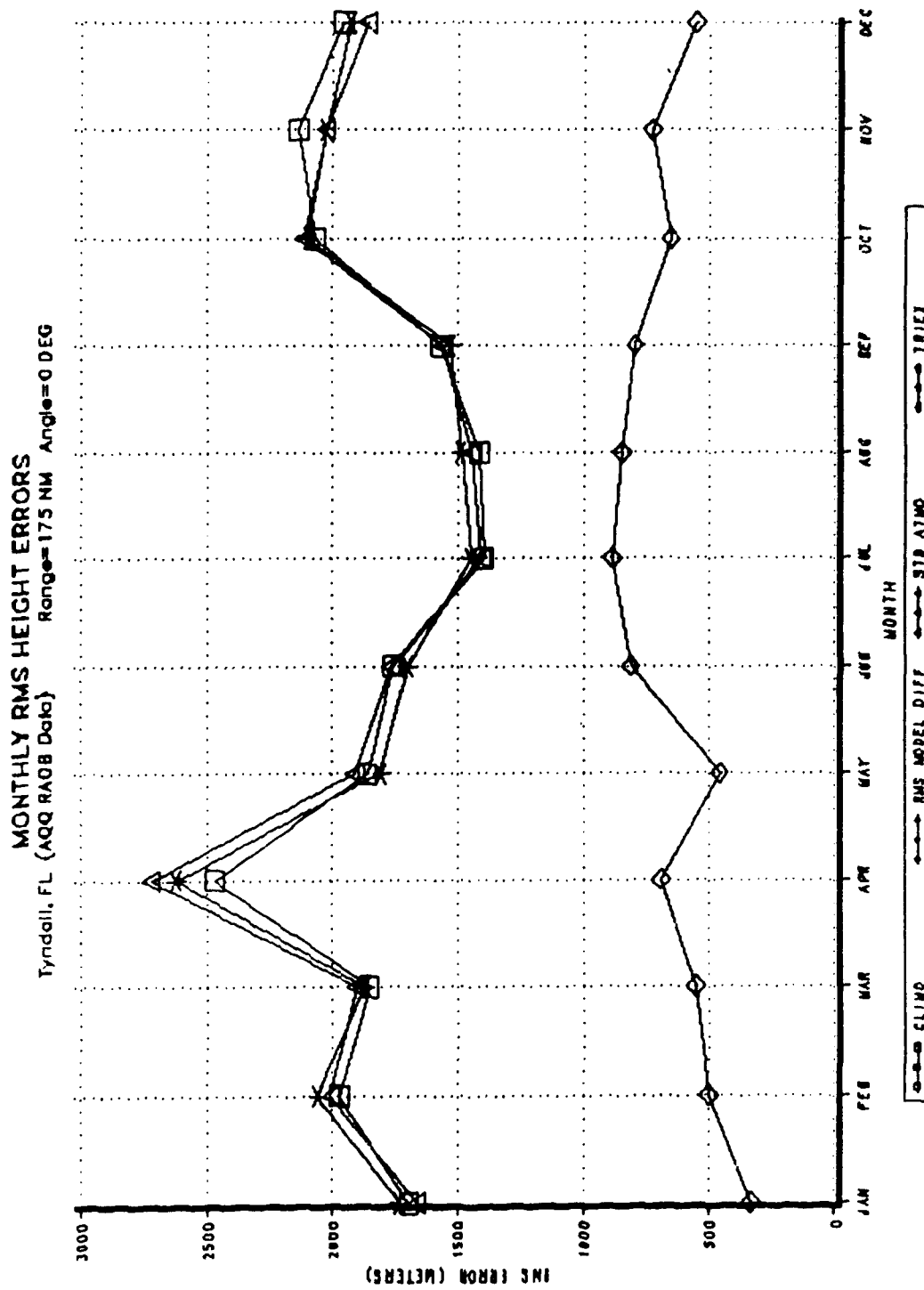


Figure 11-2

MONTHLY RMS HEIGHT ERRORS BY HOUR

Tyndall, FL (AQQ RA08 Bdg)
Range=173 NM Angle=0 DEG

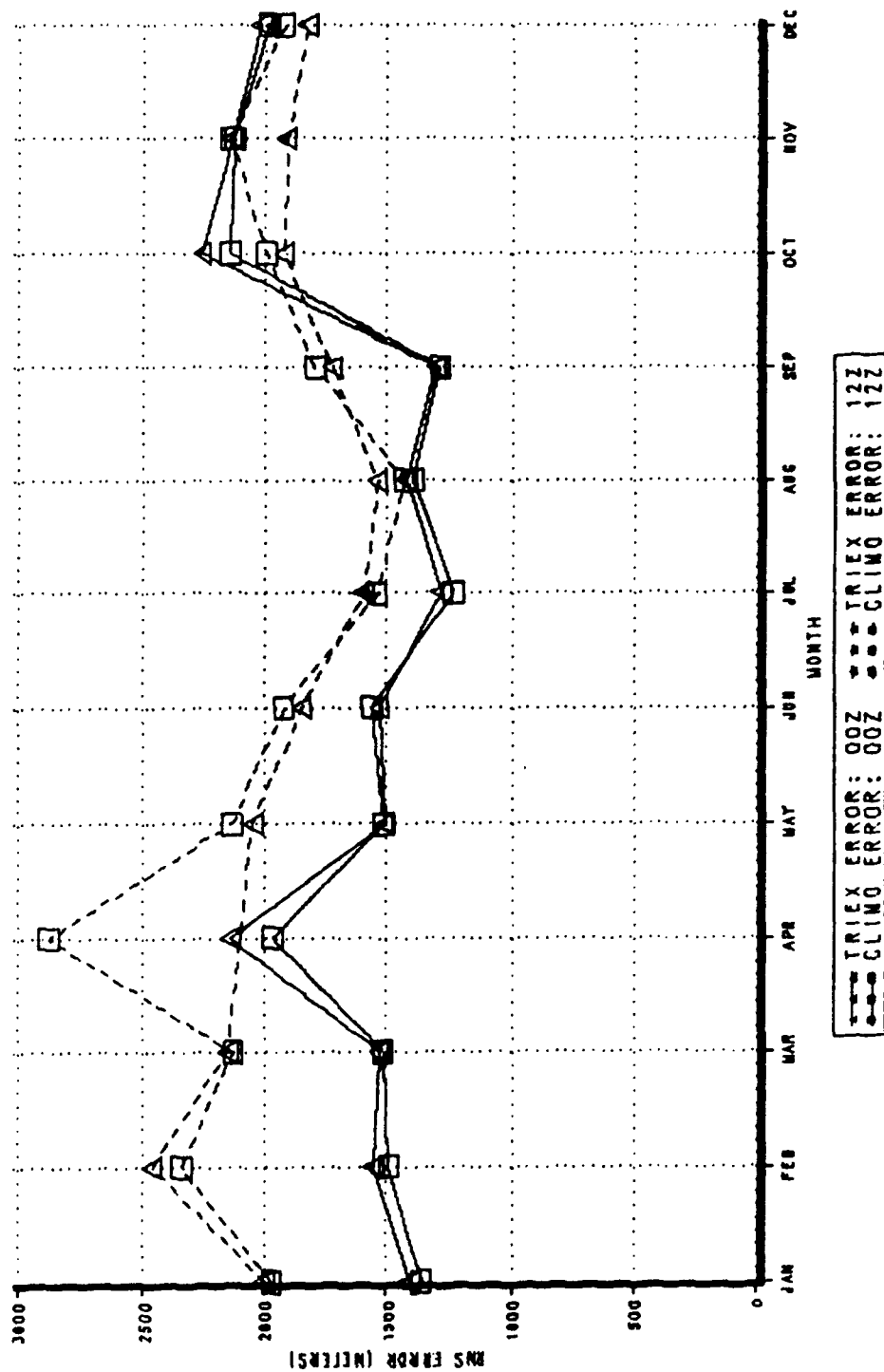


Figure 11-3

ERROR STATISTICS
Tyndall, FL (AQQ RAOB Data)
Range=175 NM Angle=0 DEG

MODEL	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
TRIEXPONENTIAL	212.28	1870.38	-3040.5	6601.2
CLIMATOLOGY	486.38	1801.52	-3600.7	6644.7
STANDARD ATMOSPHERE	589.58	1798.09	-3412.4	5970.7

Figure 11-4

TRIEXPONENTIAL MODEL ERRORS
Tyndall, FL (AQQ RAOB Data)
Range=175 NM Angle=0 DEG

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-3000	3	0.0	3	0.0
-2500	8	0.1	11	0.1
-2000	135	1.7	146	1.9
-1500	690	8.8	836	10.6
-1000	1551	19.7	2387	30.3
-500	1636	20.8	4023	51.1
0	1540	19.6	5563	70.6
500	875	11.1	6438	81.7
1000	364	4.6	6802	86.4
1500	208	2.6	7010	89.0
2000	90	1.1	7100	90.1
2500	52	0.7	7152	90.8
3000	28	0.4	7180	91.2
3500	20	0.3	7200	91.4
4000	14	0.2	7214	91.6
4500	29	0.4	7243	92.0
5000	124	1.6	7367	93.5
5500	171	2.2	7538	95.7
6000	263	3.3	7801	99.0
6500	75	1.0	7876	100.0

CLIMATOLOGY ERRORS

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-3500	3	0.0	3	0.0
-3000	6	0.1	9	0.1
-2500	3	0.0	12	0.2
-2000	33	0.4	45	0.6
-1500	224	2.8	269	3.4
-1000	933	11.8	1202	15.3
-500	1799	22.8	3001	38.1
0	1891	24.0	4892	62.1
500	1175	14.9	6067	77.0
1000	599	7.6	6666	84.6
1500	281	3.6	6947	88.2
2000	124	1.6	7071	89.8
2500	65	0.8	7136	90.6
3000	28	0.4	7164	91.0
3500	30	0.4	7194	91.3
4000	20	0.3	7214	91.6
4500	13	0.2	7227	91.8
5000	55	0.7	7282	92.5
5500	205	2.6	7487	95.1
6000	318	4.0	7805	99.1
6500	71	0.9	7876	100.0

Figure 11-5

Tyndall, FL (AQG RA08 Data) Range=1.75 NM Angle=0 DEG

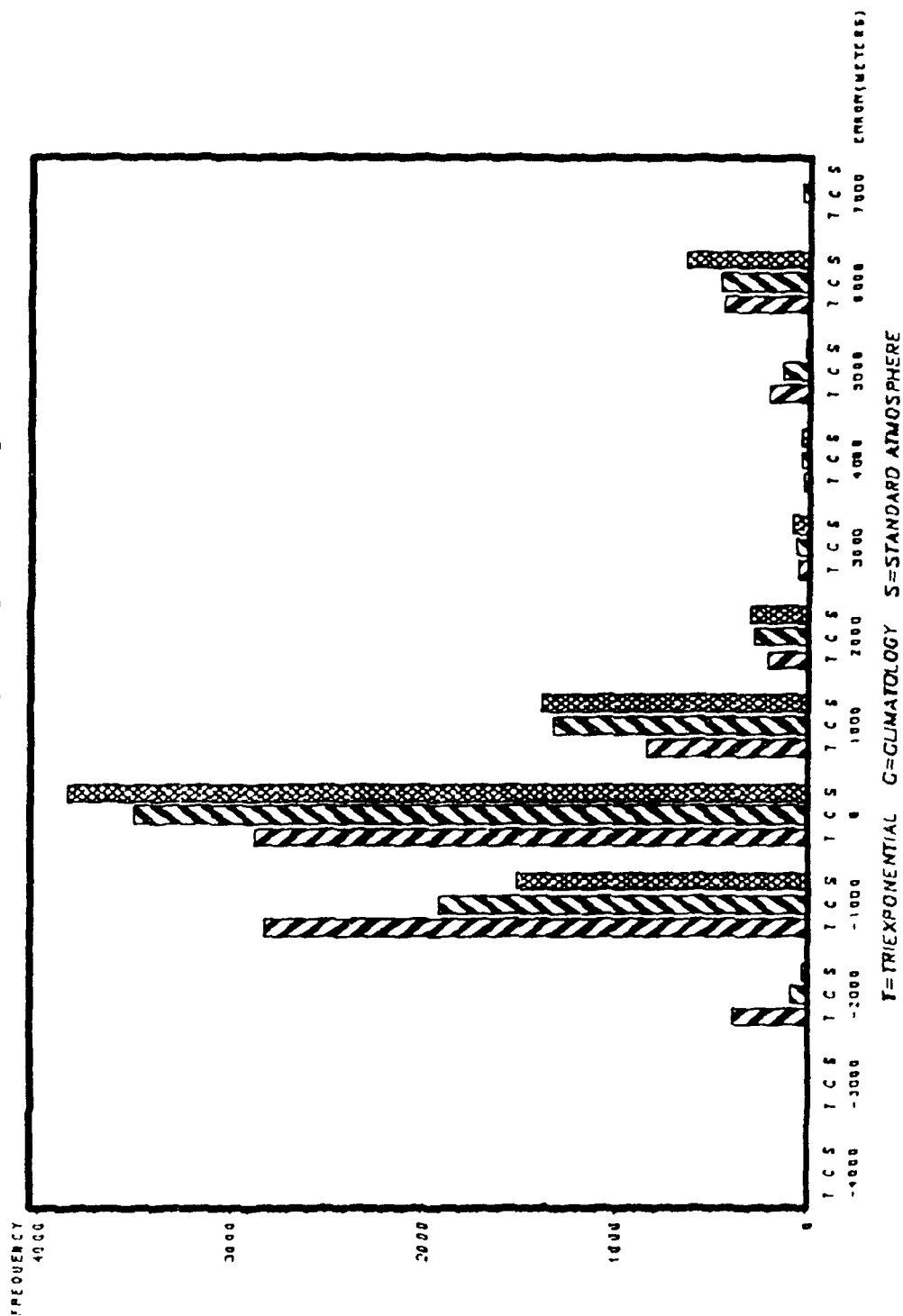


Figure 11-6

TRIEXPONENTIAL MODEL ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												Total
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
-3000	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.15	0.15	0.00	0.00	0.00	
-2500	0.00	0.16	0.00	0.00	0.00	0.00	0.15	0.30	0.46	0.00	0.16	0.00	
-2000	0.00	0.16	0.00	0.15	0.15	3.39	3.18	5.50	4.79	1.54	1.11	0.44	
-1500	1.19	1.79	1.35	0.46	8.86	17.26	20.00	20.80	13.60	10.31	5.86	3.25	
-1000	10.55	9.61	8.22	8.01	19.37	28.35	36.97	33.88	29.52	19.13	15.85	16.27	
-500	19.91	21.82	20.78	15.87	24.17	21.88	19.24	18.28	21.79	22.12	19.81	23.52	
0	33.73	28.18	28.70	22.34	17.57	12.63	9.70	9.21	12.98	15.55	21.87	22.49	
500	16.94	14.17	18.68	15.10	10.96	5.08	4.09	4.01	5.87	9.72	12.84	15.83	
1000	5.79	6.84	6.43	8.94	5.41	1.39	0.91	1.93	2.01	3.89	6.97	5.18	
1500	3.12	4.07	3.59	5.39	3.00	0.77	0.76	0.74	2.16	2.99	3.17	2.07	
2000	1.04	1.30	1.94	2.47	0.45	1.08	0.00	0.59	0.62	2.09	0.63	1.48	
2500	0.45	1.30	0.45	0.77	0.75	0.92	0.76	0.15	0.62	0.30	0.95	0.59	
3000	0.30	0.16	0.30	0.77	0.45	0.00	0.15	0.30	0.46	0.90	0.32	0.15	
3500	0.00	0.16	0.45	0.31	0.60	0.00	0.00	0.00	0.31	0.45	0.79	0.00	
4000	0.15	0.16	0.45	0.62	0.00	0.15	0.00	0.00	0.00	0.15	0.32	0.15	
4500	0.30	0.33	0.30	0.31	0.30	0.62	0.61	0.74	0.15	0.45	0.00	0.15	
5000	0.00	0.00	0.15	1.54	1.65	3.70	3.18	3.27	3.25	1.15	0.48	0.15	
5500	0.15	1.30	2.99	7.86	4.65	2.16	0.30	0.15	0.46	3.89	1.74	0.44	
6000	3.71	6.03	4.48	8.01	1.65	0.46	0.00	0.00	0.77	4.63	5.55	5.01	
6500	2.67	2.44	0.75	1.08	0.00	0.00	0.00	0.00	0.00	0.45	1.48	2.51	
Total	673	614	669	649	666	649	660	673	647	669	611	676	7876

Figure 11-7

CLIMATOLOGY ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
-3500	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.16	0.00	
-3000	0.00	0.33	0.00	0.00	0.00	0.15	0.00	0.15	0.15	0.00	0.00	0.15	
-2500	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.15	
-2000	0.00	0.00	0.15	2.93	0.30	0.15	0.00	0.15	0.00	1.20	0.00	0.15	
-1500	0.15	3.58	6.43	8.32	1.05	2.00	0.61	1.19	4.48	5.53	0.79	0.15	
-1000	8.32	24.76	19.13	16.49	12.61	8.78	8.94	12.33	6.96	14.05	5.23	5.18	
-500	30.91	29.15	22.87	17.57	26.58	21.57	27.58	23.92	22.57	17.64	15.85	17.90	
0	31.20	15.80	20.48	16.33	20.57	28.97	29.24	29.87	26.74	20.93	19.33	27.66	
500	12.78	8.14	10.61	6.93	15.47	17.10	16.67	15.60	18.24	14.65	21.55	21.01	
1000	5.35	4.23	6.13	6.32	7.06	8.01	7.58	6.98	8.19	6.73	13.79	10.95	
1500	2.82	1.79	3.59	3.54	3.75	2.16	2.73	2.67	3.25	4.63	7.29	4.59	
2000	0.59	1.30	0.75	1.08	2.40	1.54	1.06	1.19	2.01	1.20	3.49	2.37	
2500	0.74	0.33	0.45	0.62	0.45	1.08	0.61	0.89	1.39	1.64	1.11	0.59	
3000	0.15	0.16	0.45	0.31	0.60	0.92	0.15	0.30	0.15	0.30	0.48	0.30	
3500	0.00	0.33	0.30	0.62	0.60	0.46	0.61	0.45	0.46	0.45	0.16	0.15	
4000	0.45	0.00	0.15	0.46	0.30	0.00	0.15	0.00	0.62	0.15	0.63	0.15	
4500	0.00	0.33	0.15	0.15	0.15	0.31	0.00	0.00	0.15	0.30	0.16	0.30	
5000	0.00	0.16	0.45	6.16	0.15	0.00	0.00	0.15	0.15	0.75	0.48	0.00	
5500	0.15	3.58	2.39	12.02	2.85	0.15	1.52	1.93	0.15	6.13	0.16	0.30	
6000	6.39	5.86	5.53	0.00	5.11	6.63	2.58	2.08	4.33	0.30	5.39	4.44	
6500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.44	3.80	3.55	
Total	73	614	669	649	666	649	660	673	647	669	631	676	7876

Figure 11-8

HEIGHT DISIRIBUTION

Tyndall, FL (AQQ RAOB Data) Range=175 NM Angle=0 DEG

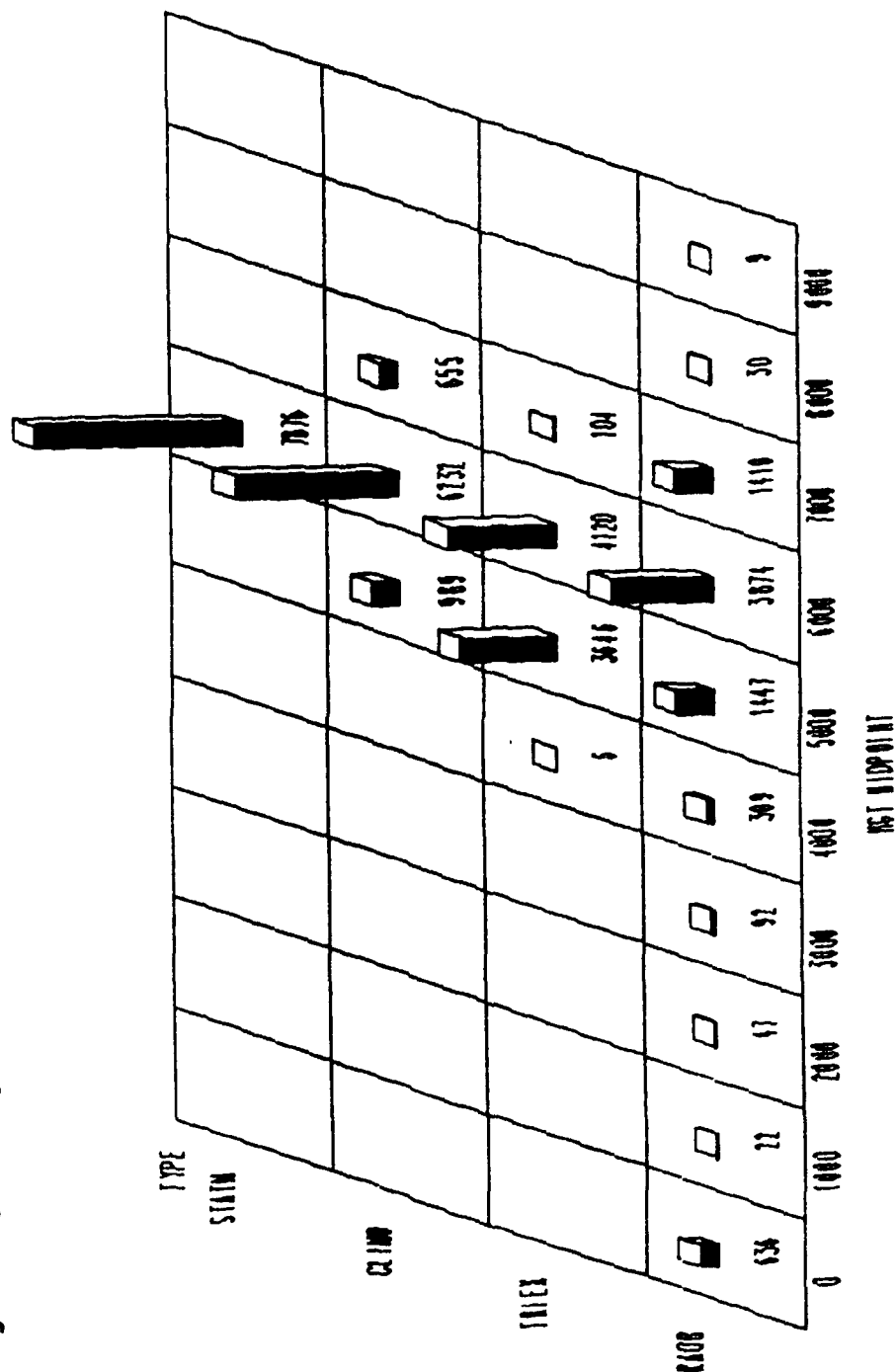


Figure 11-9

RMS ERRORS (meters) FOR
Salem, OR (SLE RAOB Data)
Range=175 NM Angle=0 DEG

ENTIRE POR

TRIEXPONENTIAL	CLIMATOLOGY	STANDARD ATMOSPHERE
986	954	985

RMS HEIGHT ERRORS FROM THE TRIEXPONENTIAL MODEL
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	685	726	641
FEB	410	262	516
MAR	701	292	950
APR	731	471	921
MAY	831	673	964
JUN	1242	1076	1386
JUL	1508	1357	1645
AUG	1531	1330	1709
SEP	1129	1053	1200
OCT	1027	968	1083
NOV	563	613	508
DEC	661	595	720

RMS HEIGHT ERRORS FROM CLIMATOLOGY
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	687	730	641
FEB	413	273	516
MAR	700	296	947
APR	737	486	923
MAY	819	677	940
JUN	1209	1071	1331
JUL	1421	1295	1537
AUG	1433	1247	1598
SEP	1101	1033	164
OCT	1005	948	1059
NOV	565	616	510
DEC	661	599	717

Figure 12-1

MONTHLY RMS HEIGHT ERRORS
 Solem, OR (SLE RAOB Data) Range=175 NM Angle=0 DEG

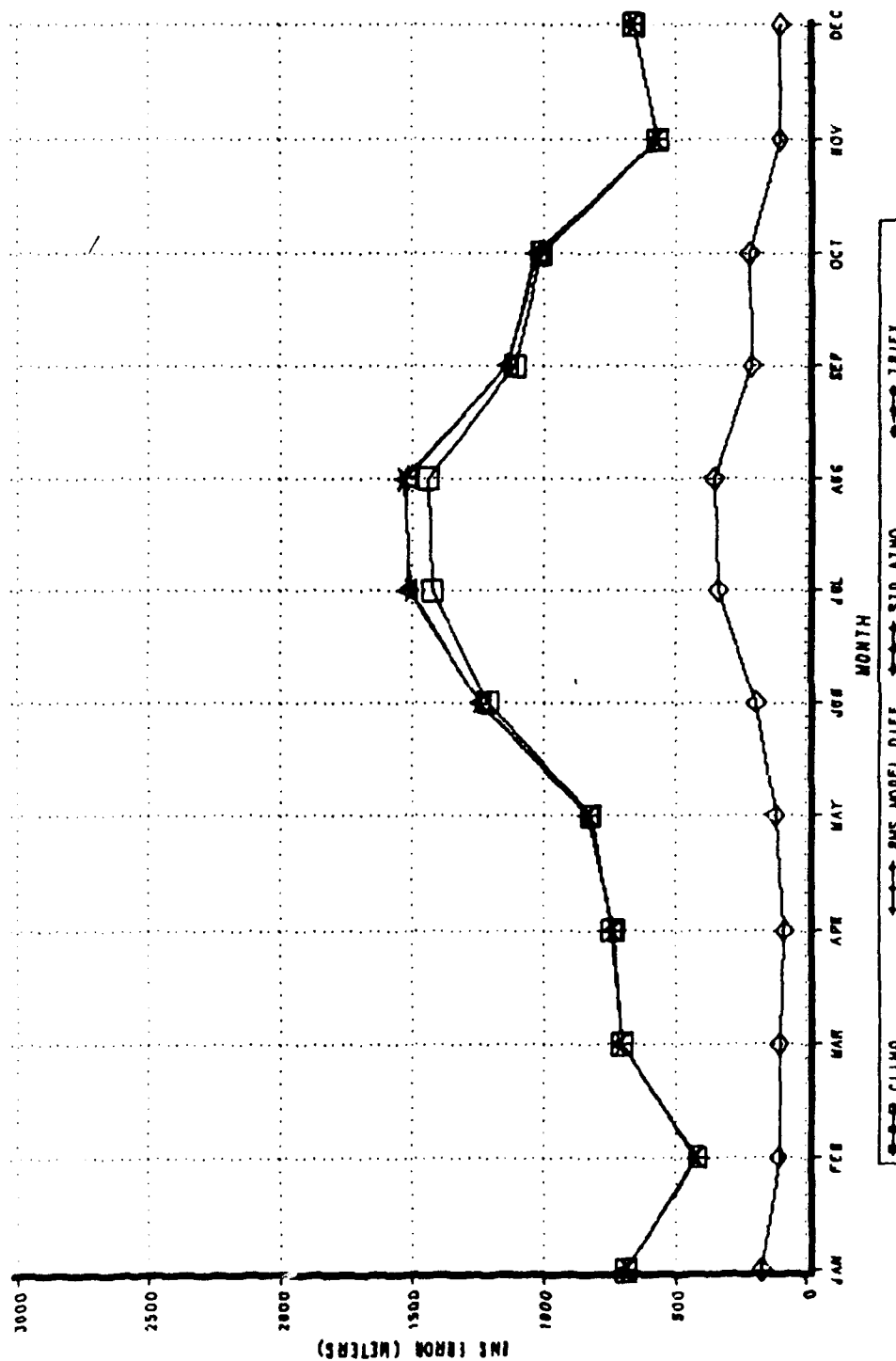


Figure 12-2

MONTHLY RMS HEIGHT ERRORS BY HOUR

Salem, OR (SLE RAD8 Data)
Range=173 NM Angle=0 DEG

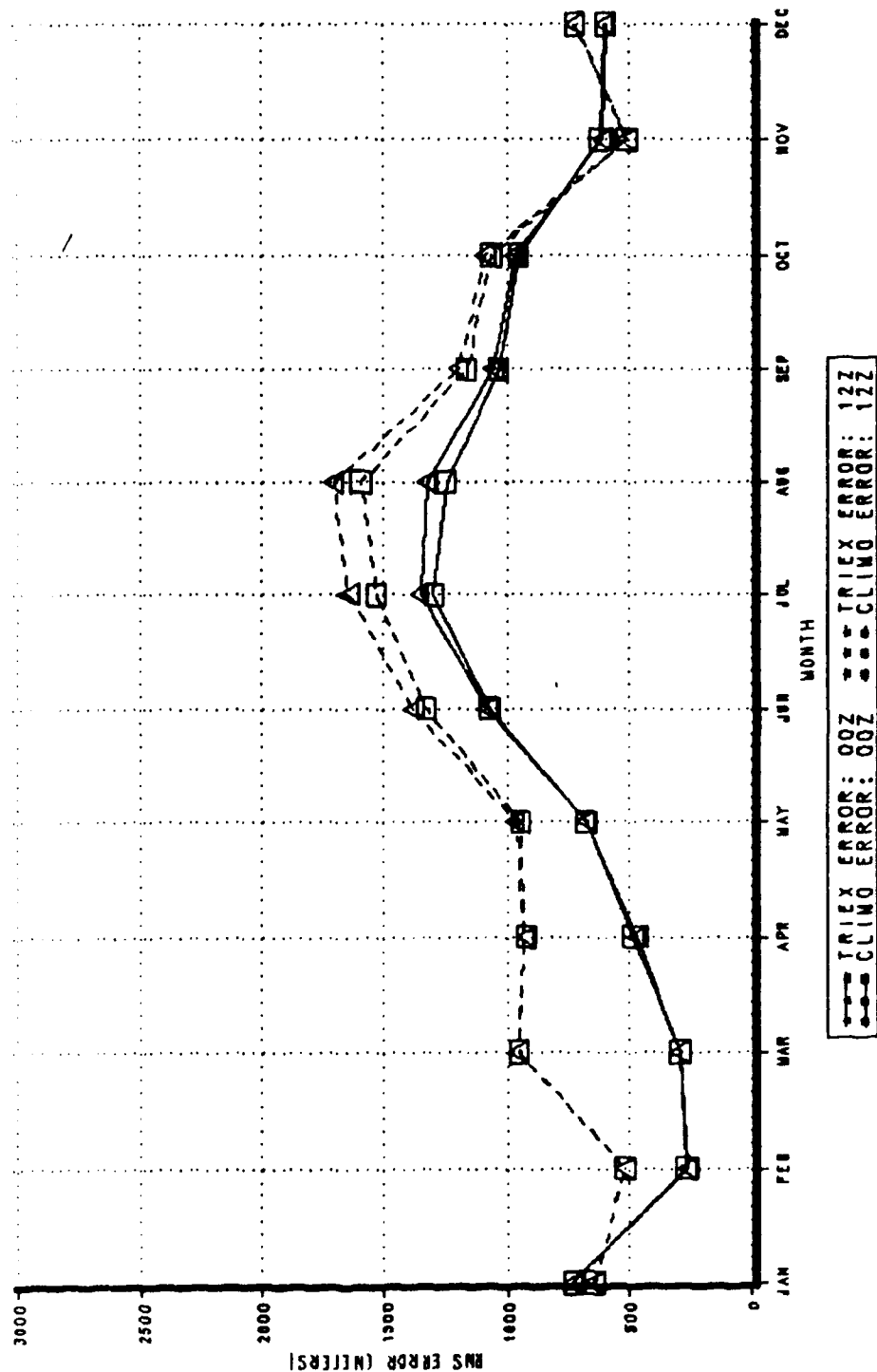


Figure 12-3

ERROR STATISTICS
Salem, OR (SLE RAOB Data)
Range=175 NM Angle=0 DEG

MODEL	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
TRIEXPONENTIAL	255.08	952.84	-1674.6	6832.4
CLIMATOLOGY	120.73	946.57	-1931.8	6679.2
STANDARD ATMOSPHERE	179.20	968.93	-1589.1	6820.1

Figure 12-4

TRIEXPONENTIAL MODEL ERRORS
Salem, OR (SLE RAOB Data)
Range=175 NM Angle=0 DEG

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-1500	13	0.2	13	0.2
-1000	57	0.7	70	0.9
-500	648	8.2	718	9.0
0	5113	64.4	5831	73.5
500	1431	18.0	7262	91.5
1000	318	4.0	7580	95.5
1500	119	1.5	7699	97.0
2000	39	0.5	7738	97.5
2500	26	0.3	7764	97.8
3000	11	0.1	7775	98.0
3500	8	0.1	7783	98.1
4000	8	0.1	7791	98.2
4500	3	0.0	7794	98.2
5000	3	0.0	7797	98.2
5500	1	0.0	7798	98.3
6000	5	0.1	7803	98.3
6500	131	1.7	7934	100.0
7000	2	0.0	7936	100.0

CLIMATOLOGY ERRORS

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-2000	2	0.0	2	0.0
-1500	23	0.3	25	0.3
-1000	136	1.7	161	2.0
-500	1512	19.1	1673	21.1
0	4801	60.5	6474	81.6
500	921	11.6	7395	93.2
1000	242	3.0	7637	96.2
1500	80	1.0	7717	97.2
2000	33	0.4	7750	97.7
2500	18	0.2	7768	97.9
3000	10	0.1	7778	98.0
3500	10	0.1	7788	98.1
4000	4	0.1	7792	98.2
4500	4	0.1	7796	98.2
5000	1	0.0	7797	98.2
5500	3	0.0	7800	98.3
6000	55	0.7	7855	99.0
6500	81	1.0	7936	100.0

Figure 12-5

HEIGHT ERROR DISTRIBUTION Schem. OR (SLE RAD0 Data) Range=175 NM Angle=0 DEG

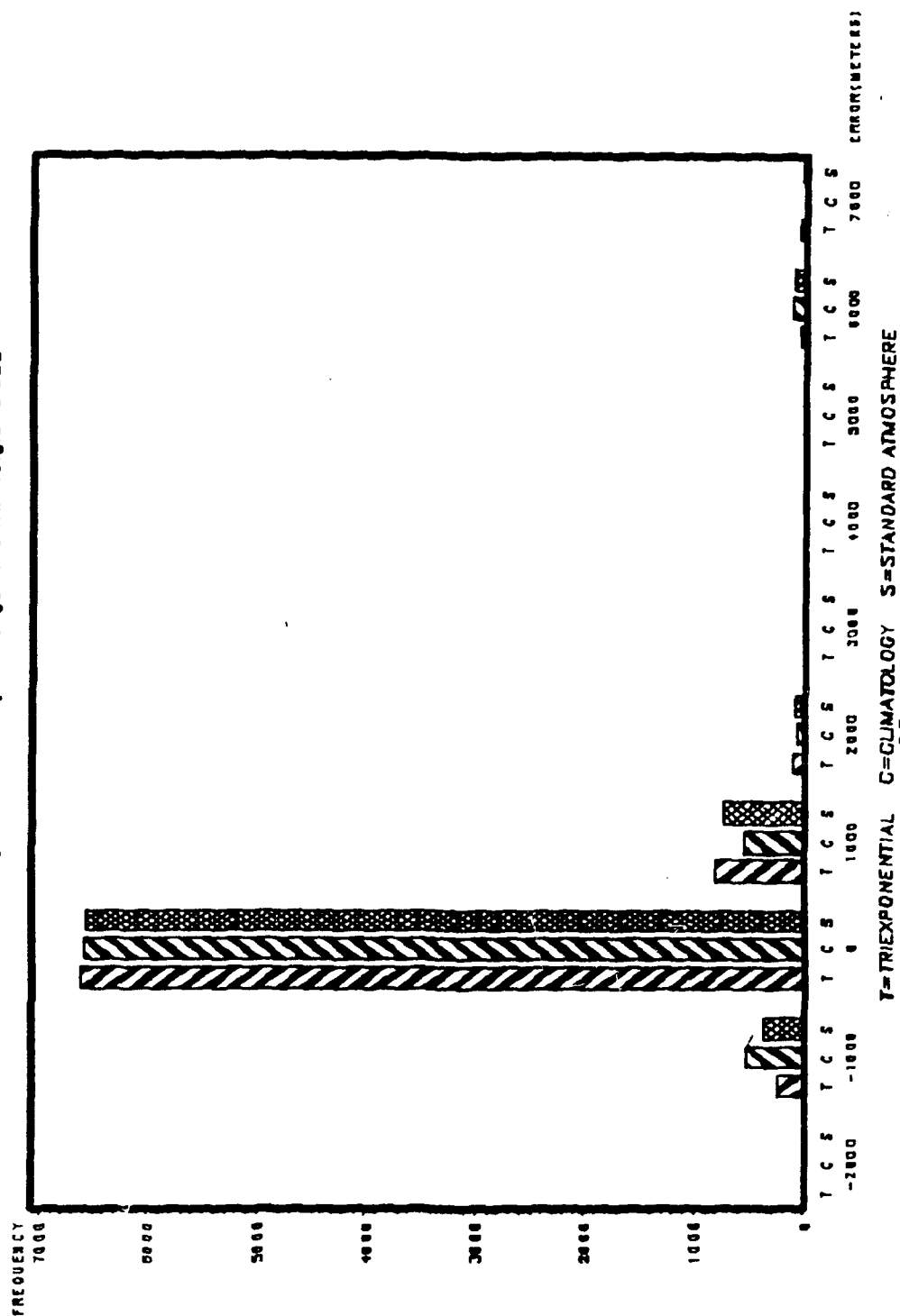


Figure 12-6

TRIEXPONENTIAL MODEL ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												Total
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
-1500	0.00	0.16	0.15	0.00	0.44	0.15	0.15	0.15	0.30	0.30	0.15	0.00	
-1000	0.89	0.33	0.00	0.92	0.44	0.77	1.04	0.89	0.61	1.19	1.07	0.45	
-500	11.72	7.64	7.93	7.37	5.75	8.17	4.02	7.57	8.84	11.62	8.54	8.78	
0	68.84	77.89	74.40	77.27	67.70	55.32	51.04	44.21	55.79	55.14	72.41	74.40	
500	14.24	12.20	13.92	9.98	18.58	22.19	25.60	28.78	20.58	21.61	15.55	12.50	
1000	2.08	0.65	1.95	2.30	3.98	7.24	7.14	8.61	3.64	4.92	0.76	2.53	
1500	0.89	0.65	0.60	0.77	1.18	1.39	3.57	2.67	3.66	1.94	0.30	0.30	
2000	0.15	0.00	0.00	0.00	0.44	0.62	1.64	1.34	1.07	0.15	0.46	0.00	
2500	0.30	0.33	0.00	0.15	0.00	0.62	0.30	0.59	0.61	0.89	0.00	0.15	
3000	0.00	0.00	0.00	0.00	0.15	0.31	0.45	0.15	0.30	0.00	0.30	0.00	
3500	0.15	0.00	0.00	0.15	0.00	0.15	0.15	0.15	0.15	0.30	0.00	0.00	
4000	0.00	0.00	0.00	0.00	0.15	0.15	0.45	0.00	0.15	0.15	0.00	0.15	
4500	0.00	0.00	0.15	0.15	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	
5000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.45	0.00	0.00	0.00	0.00	
5500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	
6000	0.00	0.00	0.00	0.00	0.00	0.15	0.15	0.15	0.15	0.15	0.00	0.00	
6500	0.74	0.16	0.90	0.92	1.18	2.77	4.17	4.01	1.98	1.64	0.46	0.74	
7000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.00	0.00	0.00	0.00	
Total	674	615	668	651	678	649	672	674	656	671	656	672	7936

Figure 12-7

CLIMATOLOGY ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH													Total
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC		
-2000	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.15	0.00	0.00	0.00	0.00		
-1500	0.15	0.16	0.15	0.00	0.29	0.31	1.04	0.30	0.30	0.45	0.30	0.00		
-1000	1.93	0.81	0.00	0.77	1.03	2.62	1.93	4.45	2.13	2.68	1.22	0.89		
-500	24.33	13.82	14.07	8.14	11.80	14.79	33.18	29.67	22.56	28.46	12.65	14.14		
0	61.42	74.63	71.56	75.12	66.52	56.55	39.88	41.84	50.15	48.14	70.27	71.43		
500	8.01	8.78	10.93	11.67	14.31	14.64	10.27	10.98	13.11	12.67	13.57	10.27		
1000	2.08	0.65	1.80	2.46	3.10	5.24	5.21	5.04	5.34	3.13	0.46	1.93		
1500	0.89	0.65	0.45	0.46	1.03	0.92	2.38	1.19	2.13	1.34	0.30	0.30		
2000	0.00	0.00	0.00	0.00	0.44	0.92	0.60	1.19	1.07	0.30	0.46	0.00		
2500	0.30	0.33	0.00	0.15	0.15	0.31	0.45	0.00	0.30	0.60	0.00	0.15		
3000	0.00	0.00	0.00	0.00	0.00	0.31	0.15	0.30	0.46	0.00	0.30	0.00		
3500	0.15	0.00	0.00	0.15	0.00	0.15	0.45	0.00	0.15	0.45	0.00	0.00		
4000	0.00	0.00	0.00	0.00	0.15	0.15	0.15	0.00	0.00	0.00	0.00	0.15		
4500	0.00	0.00	0.15	0.15	0.00	0.00	0.00	0.30	0.00	0.00	0.00	0.00		
5000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00		
5500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.30	0.00	0.00	0.00		
6000	0.00	0.00	0.00	0.00	0.00	1.23	2.68	3.71	0.46	0.15	0.00	0.00		
6500	0.74	0.16	0.90	0.92	1.18	1.69	1.64	0.59	1.52	1.64	0.46	0.74		
Total	674	615	668	651	678	649	672	674	656	671	656	672	7936	

Figure 12-8

HEIGHT DISTRIBUTION

Salem, OR (SLE RAOB Data) Range = 175 NM Angle = 0 DEG

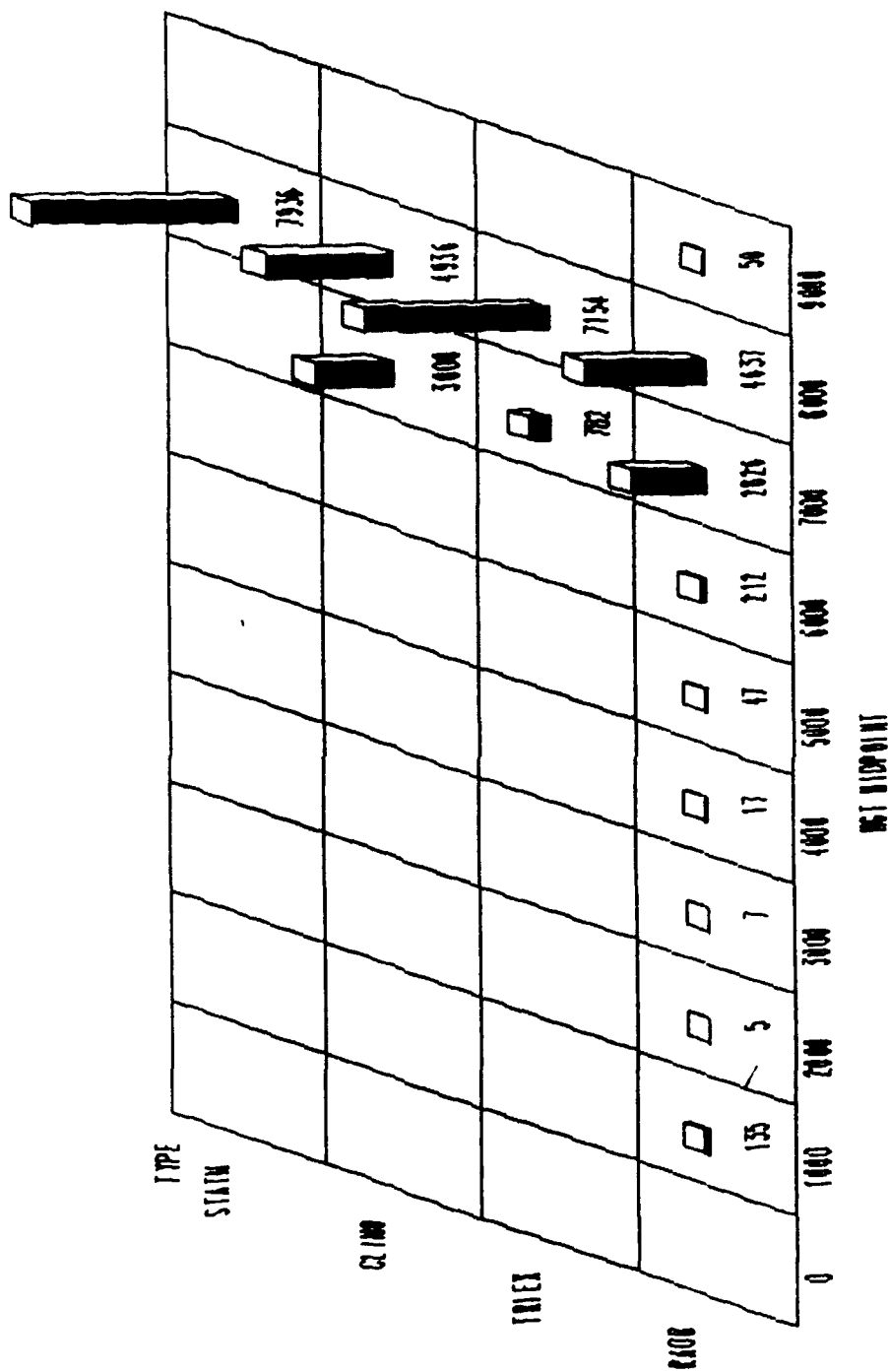


Figure 12-9

RMS ERRORS (meters) FOR
Gibbsboro, NJ (ACY RAOB Data)
Range=175 NM Angle=0 DEG

ENTIRE POR

TRIEXPONENTIAL	CLIMATOLOGY	STANDARD ATMOSPHERE
1604	1621	1677

RMS HEIGHT ERRORS FROM THE TRIEXPONENTIAL MODEL
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	717	804	616
FEB	873	663	1047
MAR	1180	987	1341
APR	1801	1721	1879
MAY	2057	2055	2060
JUN	2030	1714	2305
JUL	1910	1662	2134
AUG	1770	1674	1862
SEP	1743	1823	1660
OCT	1726	1744	1708
NOV	1609	1687	1528
DEC	1077	1251	861

RMS HEIGHT ERRORS FROM CLIMATOLOGY
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	726	825	610
FEB	869	675	1032
MAR	1193	1004	1353
APR	1744	1664	1823
MAY	2075	2089	2061
JUN	1980	1794	2151
JUL	1917	1720	2099
AUG	1837	1766	1904
SEP	1801	1860	1741
OCT	1819	1886	1745
NOV	1616	1710	1516
DEC	1107	1304	859

Figure 13-1

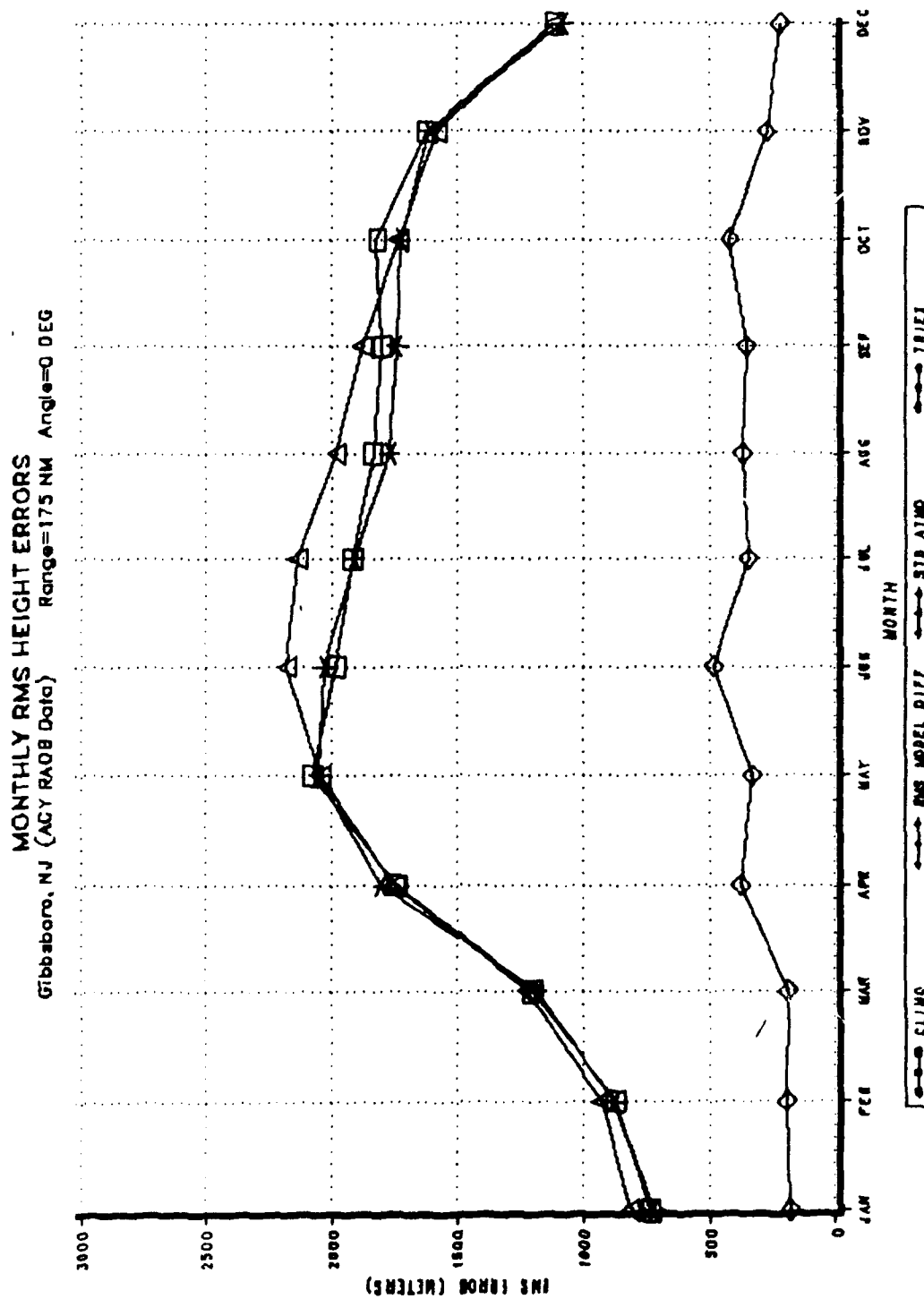


Figure 13-2

MONTHLY RMS HEIGHT ERRORS BY HOUR

Gibbsboro, NJ (ACY RA08 Data)
Range=173 NM Angle=0 DEG

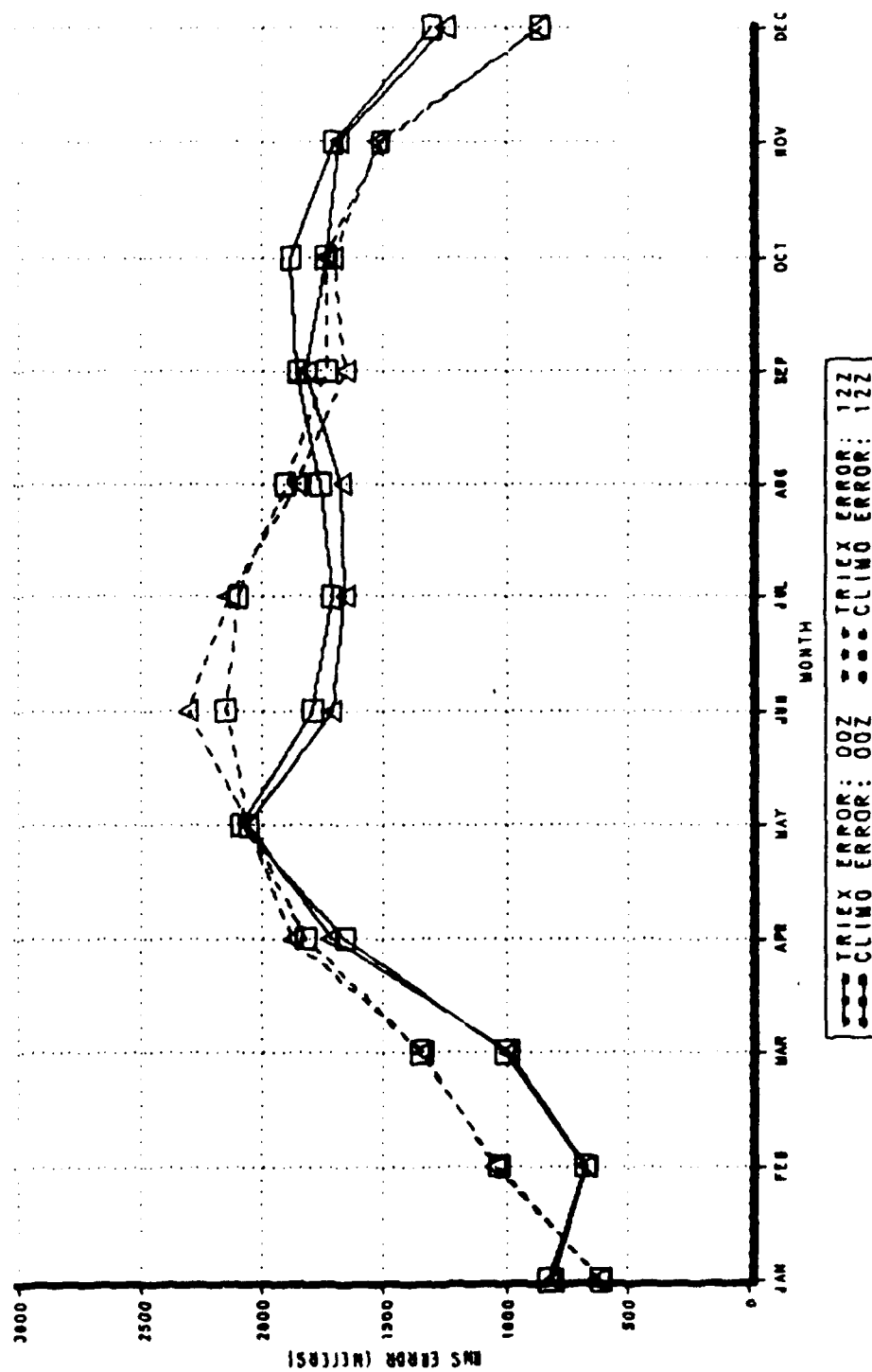


Figure 13-3

ERROR STATISTICS
Gibbsboro, NJ (ACY RAOB Data)
Range=175 NM Angle=0 DEG

MODEL	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
TRIEXPONENTIAL	357.97	1563.87	-3027.0	6709.4
CLIMATOLOGY	339.67	1585.18	-3311.6	6461.4
STANDARD ATMOSPHERE	322.33	1645.86	-2930.6	6003.3

Figure 13-4

TRIEXPONENTIAL MODEL ERRORS
Gibbsboro, NJ (ACY RAOB Data)
Range=175 NM Angle=0 DEG

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-3000	1	0.0	1	0.0
-2500	1	0.0	2	0.0
-2000	5	0.1	7	0.1
-1500	29	0.6	36	0.7
-1000	293	5.8	329	6.5
-500	1397	27.8	1726	34.3
0	1907	37.9	3633	72.3
500	636	12.6	4269	84.9
1000	227	4.5	4496	89.4
1500	90	1.8	4586	91.2
2000	62	1.2	4648	92.4
2500	20	0.4	4668	92.8
3000	16	0.3	4684	93.2
3500	10	0.2	4694	93.4
4000	9	0.2	4703	93.5
4500	9	0.2	4712	93.7
5000	46	0.9	4758	94.6
5500	86	1.7	4844	96.3
6000	129	2.6	4973	98.9
6500	55	1.1	5028	100.0

CLIMATOLOGY ERRORS

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-3500	1	0.0	1	0.0
-3000	3	0.1	4	0.1
-2500	2	0.0	6	0.1
-2000	11	0.2	17	0.3
-1500	67	1.3	84	1.7
-1000	370	7.4	454	9.0
-500	1404	27.9	1858	37.0
0	1700	33.8	3558	70.8
500	692	13.8	4250	84.5
1000	233	4.6	4483	89.2
1500	102	2.0	4585	91.2
2000	51	1.0	4636	92.2
2500	35	0.7	4671	92.9
3000	14	0.3	4685	93.2
3500	9	0.2	4694	93.4
4000	9	0.2	4703	93.5
4500	6	0.1	4709	93.7
5000	35	0.7	4744	94.4
5500	110	2.2	4854	96.5
6000	130	2.6	4984	99.1
6500	44	0.9	5028	100.0

Figure 13-5

HEIGHT ERROR DISTRIBUTION Gibbsboro, NJ (AGY RA08 Data) Range=175 NM Angle=0 DEG

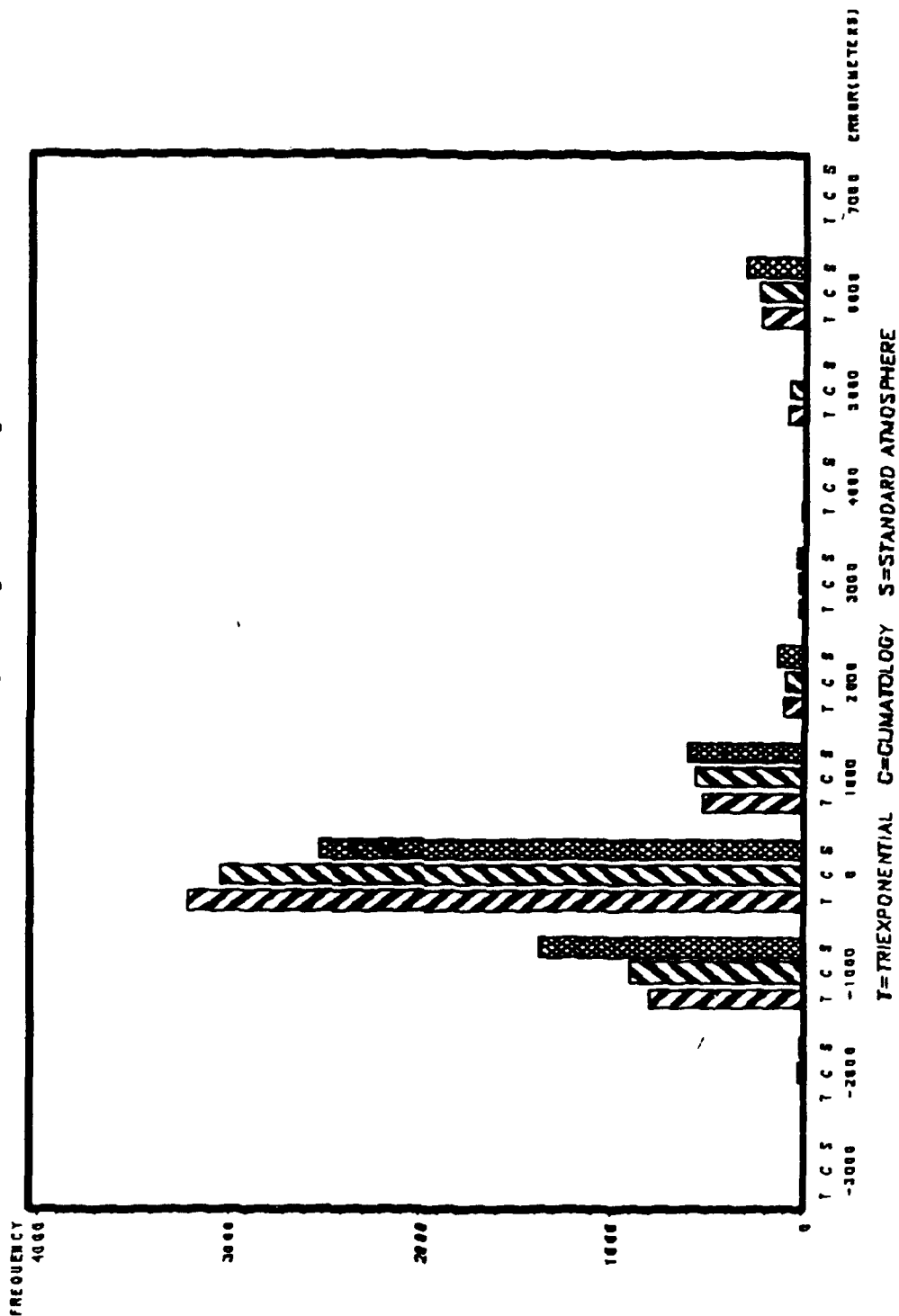


Figure 13-6

TRIEXPONENTIAL MODEL ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												Total
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
-3000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	
-2500	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
-2000	0.00	0.00	0.00	0.00	0.24	0.50	0.00	0.24	0.00	0.22	0.00	0.00	
-1500	0.00	0.00	0.49	0.25	0.47	0.25	2.19	2.13	0.00	0.86	0.23	0.00	
-1000	1.19	1.60	2.92	4.22	6.86	9.25	12.65	14.45	7.28	4.95	2.93	1.80	
-500	17.86	23.26	28.95	28.78	30.26	28.25	29.20	29.15	34.47	30.11	27.54	25.23	
0	61.67	55.08	48.18	36.97	28.61	24.75	23.11	23.93	26.21	33.33	42.44	51.35	
500	13.81	13.10	10.95	12.90	11.82	11.25	9.73	11.85	13.11	15.48	12.42	14.86	
1000	3.81	4.28	2.92	4.47	5.20	7.75	6.33	4.98	4.37	4.09	4.74	1.58	
1500	0.48	0.27	1.22	2.48	2.60	2.75	1.95	2.37	2.91	1.29	1.35	1.80	
2000	0.00	0.53	1.22	1.24	1.89	2.50	2.19	0.71	1.70	1.08	1.13	0.68	
2500	0.24	0.27	0.00	0.25	0.71	0.50	1.22	0.00	0.73	0.22	0.68	0.00	
3000	0.00	0.00	0.24	0.74	0.24	0.25	0.73	0.71	0.24	0.43	0.23	0.00	
3500	0.00	0.27	0.00	0.25	0.47	0.00	0.24	0.24	0.00	0.43	0.23	0.23	
4000	0.00	0.00	0.00	0.25	0.00	0.75	0.00	0.00	0.73	0.43	0.00	0.00	
4500	0.00	0.00	0.00	0.00	0.24	0.50	0.24	0.47	0.49	0.00	0.23	0.00	
5000	0.00	0.00	0.00	0.00	0.00	0.50	4.38	4.74	0.97	0.22	0.23	0.00	
5500	0.00	0.00	0.00	0.25	2.13	6.75	3.41	2.61	3.88	1.51	0.00	0.23	
6000	0.24	0.00	1.22	3.72	5.91	3.50	2.43	1.18	2.67	4.95	3.61	0.90	
6500	0.71	1.34	1.70	3.23	2.13	0.00	0.00	0.24	0.00	0.43	2.03	1.35	
Total	420	374	411	403	423	400	411	422	412	465	443	444	5028

Figure 13-7

CLIMATOLOGY ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												Total
Col Pet	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
-3500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	
-3000	0.00	0.00	0.00	0.00	0.24	0.25	0.00	0.00	0.24	0.00	0.00	0.00	
-2500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.22	0.00	0.00	
-2000	0.00	0.00	0.24	0.25	0.24	0.75	0.49	0.24	0.00	0.22	0.23	0.00	
-1500	0.24	0.27	0.49	1.24	0.71	4.75	3.41	2.61	0.73	0.43	0.90	0.45	
-1000	0.71	1.60	0.97	17.12	6.86	17.00	14.84	11.61	11.41	3.44	2.71	1.35	
-500	26.90	32.09	36.25	36.72	24.35	24.25	23.11	29.62	24.03	16.77	31.83	30.63	
0	54.29	47.06	41.61	23.08	28.61	21.25	23.36	22.99	30.58	31.18	36.57	45.5	
500	13.57	12.83	10.71	7.20	16.31	11.25	12.17	13.27	14.32	24.30	13.54	13.96	
1000	2.86	2.94	4.38	2.98	5.67	3.00	5.35	5.69	3.88	10.32	4.29	3.38	
1500	0.24	0.80	1.46	1.99	3.31	2.75	2.68	1.90	2.67	3.01	1.58	1.80	
2000	0.24	0.53	0.73	0.99	0.95	1.50	2.43	0.71	1.94	0.86	0.90	0.45	
2500	0.00	0.27	0.00	0.25	1.42	1.25	0.97	0.71	0.97	1.08	1.13	0.23	
3000	0.00	0.00	0.24	0.74	0.47	0.00	0.24	0.24	0.49	0.43	0.23	0.23	
3500	0.00	0.27	0.00	0.25	0.24	0.25	0.49	0.47	0.00	0.22	0.00	0.00	
4000	0.00	0.00	0.00	0.00	0.47	0.50	0.00	0.24	0.73	0.22	0.00	0.00	
4500	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.24	0.00	0.22	0.45	0.00	
5000	0.00	0.00	0.00	0.00	0.00	7.25	1.46	0.00	0.00	.00	0.00	0.00	
5500	0.00	0.00	0.00	0.25	0.00	1.75	9.00	9.00	6.55	0.00	0.00	0.00	
6000	0.24	1.07	0.00	6.95	10.17	1.75	0.00	0.00	1.46	3.44	4.97	0.68	
6500	0.71	0.27	2.92	0.00	0.00	0.00	0.00	0.00	0.00	3.66	0.68	1.80	
Total	420	374	411	403	423	400	411	422	412	465	443	444	5028

Figure 13-8

HEIGHT DISIRIBUTION

Gibbsboro, NJ (ACY RAOB Data) Range=175 NM Angle=0 DEG

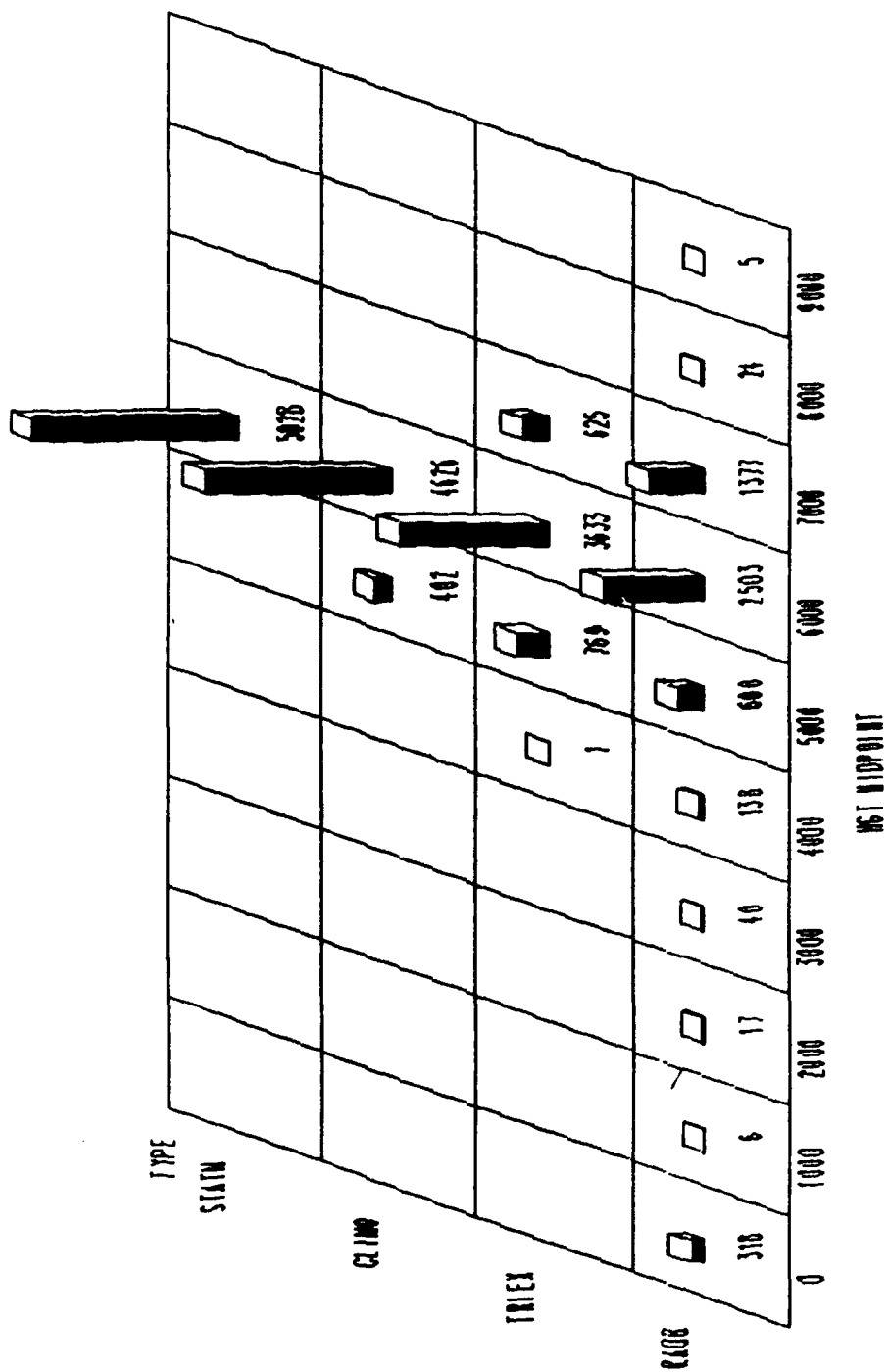


Figure 13-9

RMS ERRORS (meters) FOR
 Ellington, TX (LCH RAOB Data)
 Range=175 NM Angle=0 DEG

ENTIRE POR

TRIEXPONENTIAL	CLIMATOLOGY	STANDARD ATMOSPHERE
1833	1822	1894

RMS HEIGHT ERRORS FROM THE TRIEXPONENTIAL MODEL
 BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	1480	1163	1742
FEB	1680	1246	2022
MAR	2079	1657	2430
APR	2203	1676	2622
MAY	1954	1878	2028
JUN	1662	1588	1732
JUL	1612	1816	1382
AUG	1617	1678	1554
SEP	1796	1821	1770
OCT	2065	1647	2412
NOV	1876	1587	2123
DEC	1801	1509	2052

RMS HEIGHT ERRORS FROM CLIMATOLOGY
 BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	1427	1132	1673
FEB	1645	1241	1968
MAR	1990	1623	2299
APR	2198	1588	2668
MAY	1918	1875	1962
JUN	1712	1643	1778
JUL	1654	1895	1377
AUG	1649	1784	1503
SEP	1824	1906	1739
OCT	2046	1635	2388
NOV	1879	1537	2165
DEC	1767	1448	2036

Figure 14-1

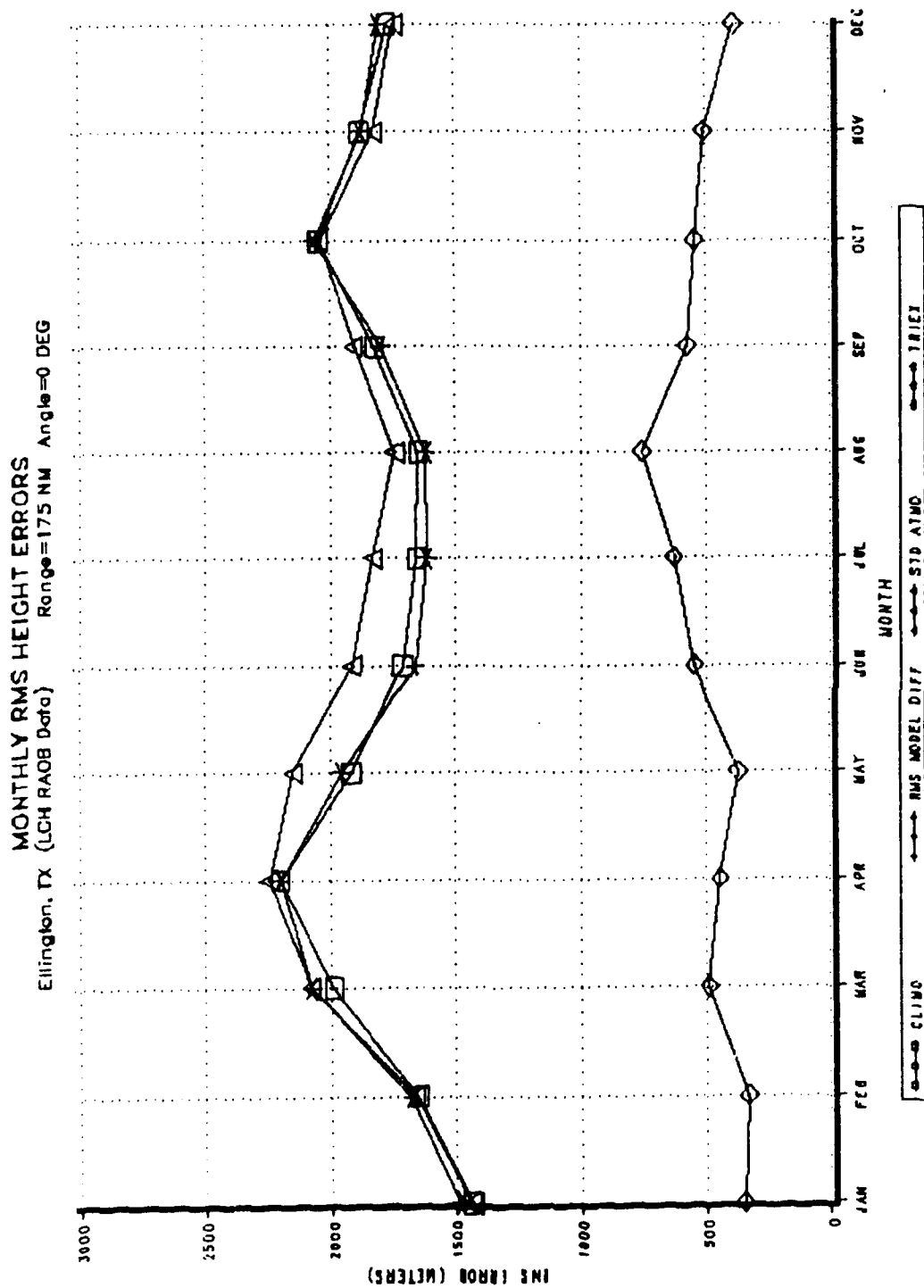


Figure 14-2

MONTHLY RMS HEIGHT ERRORS BY HOUR

Ellington, TX (LCH RAOB Data)
Range=175 NM Angle=0 DEG

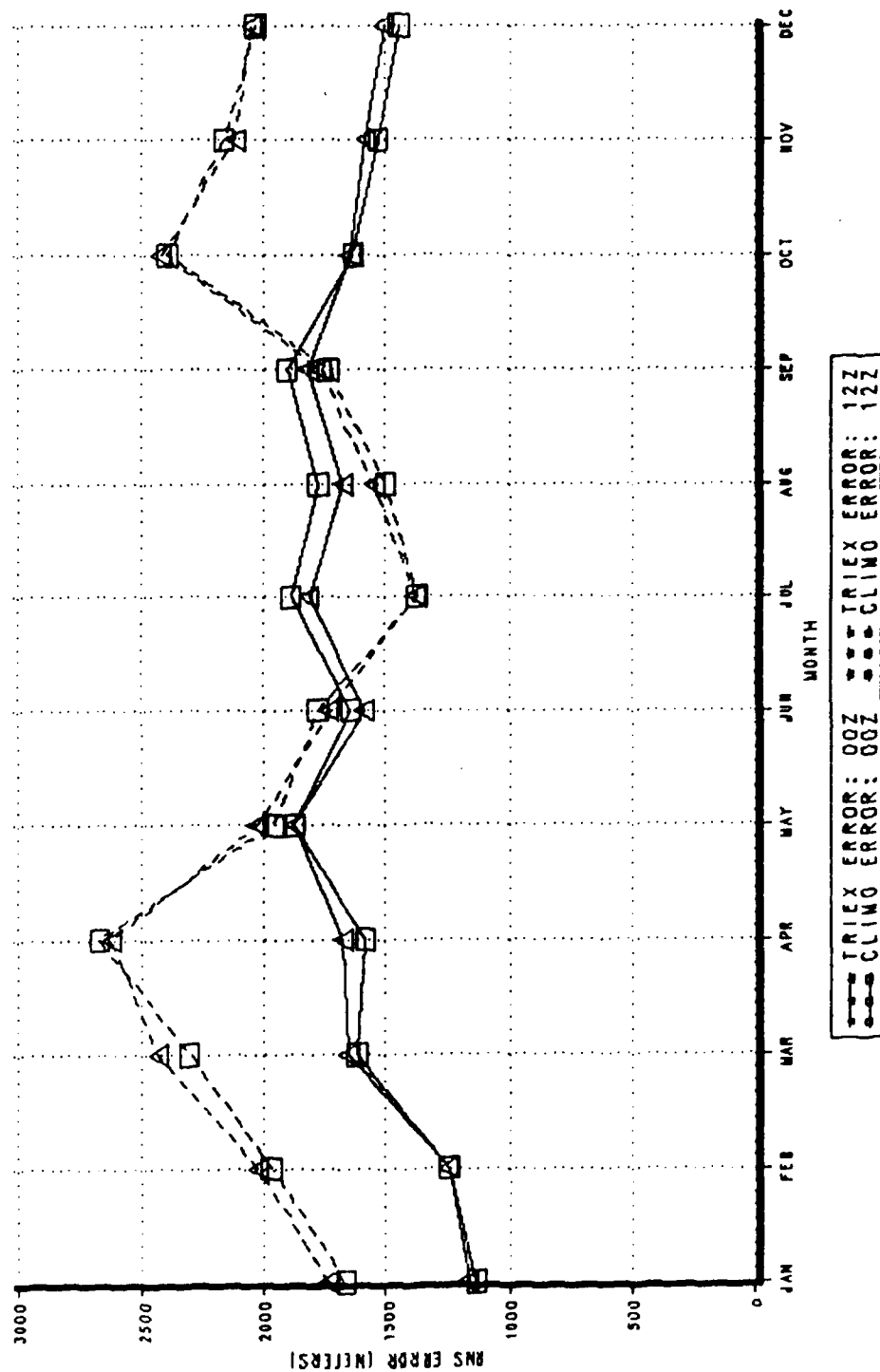


Figure 14-3

ERROR STATISTICS
Ellington, TX (LCH RAOB Data)
Range=175 NM Angle=0 DEG

MODEL	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
TRIEXPONENTIAL	291.35	1809.84	-2651.2	6519.7
CLIMATOLOGY	397.32	1778.09	-3450.4	6261.8
STANDARD ATMOSPHERE	645.17	1780.61	-3150.6	5970.6

Figure 14-4

TRIEXPONENTIAL MODEL ERRORS
 Ellington, TX (LCH RAOB Data)
 Range=175 NM Angle=0 DEG

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-2500	5	0.1	5	0.1
-2000	56	0.7	61	0.8
-1500	522	6.7	583	7.5
-1000	1359	17.4	1942	24.9
-500	1769	22.6	3711	47.5
0	1674	21.4	5385	68.9
500	901	11.5	6286	80.5
1000	404	5.2	6690	85.6
1500	209	2.7	6899	88.3
2000	127	1.6	7026	89.9
2500	65	0.8	7091	90.8
3000	39	0.5	7130	91.3
3500	34	0.4	7164	91.7
4000	14	0.2	7178	91.9
4500	32	0.4	7210	92.3
5000	164	2.1	7374	94.4
5500	145	1.9	7519	96.2
6000	238	3.0	7757	99.3
6500	56	0.7	7813	100.0

CLIMATOLOGY ERRORS

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-3500	1	0.0	1	0.0
-3000	4	0.1	5	0.1
-2500	6	0.1	11	0.1
-2000	37	0.5	48	0.6
-1500	247	3.2	295	3.8
-1000	1041	13.3	1336	17.1
-500	2055	26.3	3391	43.4
0	1842	23.6	5233	67.0
500	916	11.7	6149	78.7
1000	470	6.0	6619	84.7
1500	265	3.4	6884	88.1
2000	135	1.7	7019	89.8
2500	63	0.8	7082	90.6
3000	46	0.6	7128	91.2
3500	25	0.3	7153	91.6
4000	21	0.3	7174	91.8
4500	17	0.2	7191	92.0
5000	103	1.3	7294	93.4
5500	223	2.9	7517	96.2
6000	270	3.5	7787	99.7
6500	26	0.3	7813	100.0

Figure 14-5

HEIGHT ERROR DISTRIBUTION Ellington, TX (LCH RADAR Data) Range=175 NM Angle=0 DEG

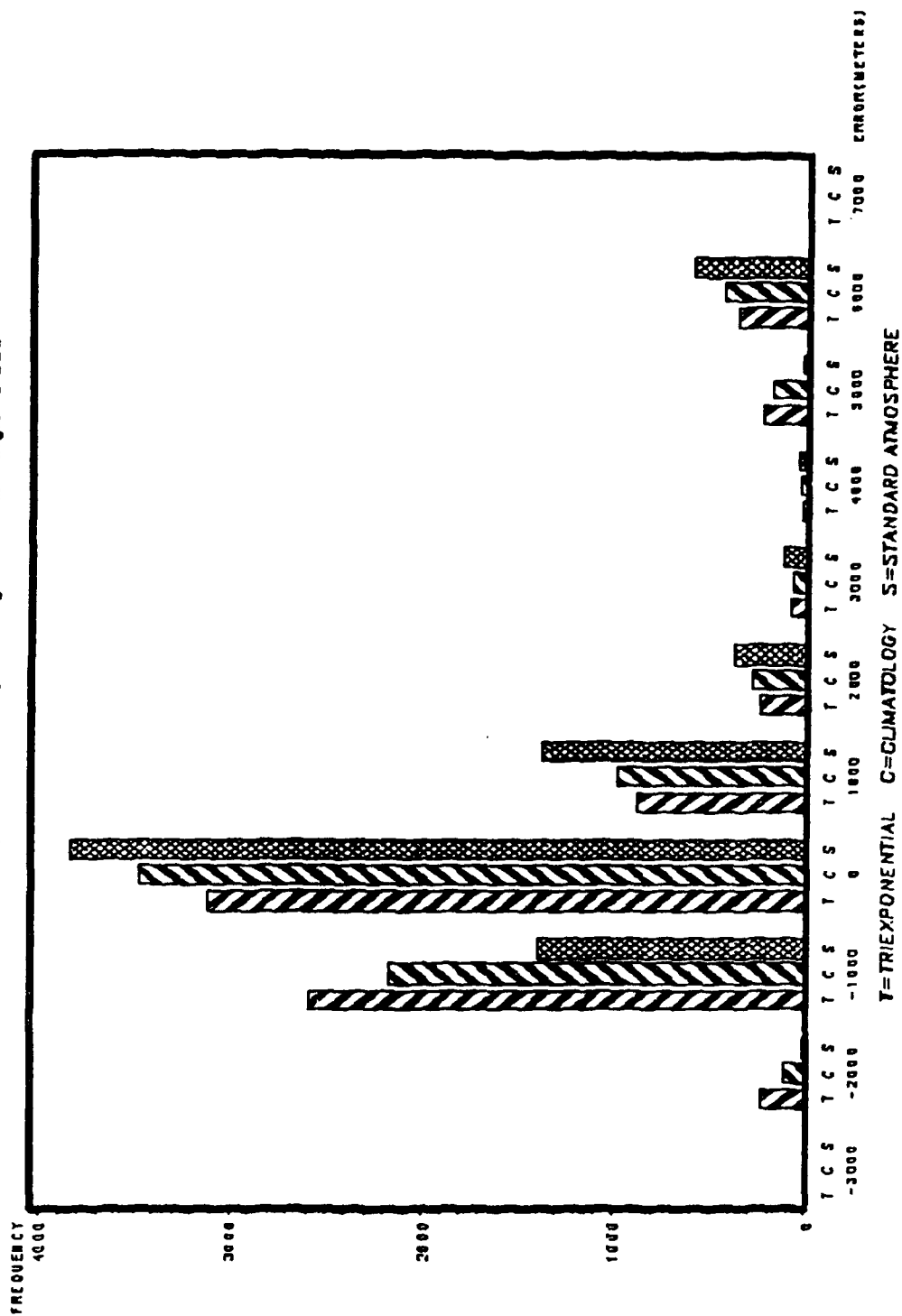


Figure 14-6

TRIEXPONENTIAL MODEL ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												Total
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
-2500	0.00	0.00	0.15	0.15	0.00	0.00	0.31	0.15	0.00	0.00	0.00	0.00	
-2000	0.00	0.00	0.15	0.15	0.15	0.16	1.72	2.17	1.99	1.50	0.32	0.30	
-1500	1.49	1.15	0.75	2.45	2.97	7.55	12.97	20.43	14.57	10.06	4.63	1.49	
-1000	7.43	6.90	8.70	9.65	16.94	25.94	27.66	27.55	24.69	19.67	19.14	14.90	
-500	21.40	23.65	26.09	23.28	24.96	21.70	22.50	19.50	20.55	20.72	25.04	22.35	
0	38.48	36.12	26.84	23.12	18.13	14.78	12.81	12.38	11.96	16.37	19.30	26.68	
500	16.20	15.93	11.99	14.24	12.33	11.16	7.34	4.64	7.82	10.66	12.28	13.71	
1000	4.90	4.76	7.05	7.04	5.50	4.09	3.28	2.63	5.06	5.26	5.90	6.41	
1500	2.53	1.97	2.85	4.13	3.86	2.83	2.19	0.93	1.99	2.85	2.55	3.28	
2000	1.49	0.82	2.25	1.68	2.23	2.36	0.94	1.24	1.07	1.20	1.75	2.38	
2500	0.89	1.15	1.35	0.61	0.59	1.10	0.47	1.08	1.38	0.45	0.32	0.60	
3000	0.15	0.66	1.05	0.15	0.74	0.47	0.47	0.62	0.46	0.75	0.32	0.15	
3500	0.45	0.16	0.15	0.31	1.04	0.47	0.47	1.08	0.31	0.30	0.16	0.30	
4000	0.00	0.00	0.15	0.61	0.45	0.31	0.16	0.00	0.00	0.00	0.16	0.30	
4500	0.00	0.33	0.15	0.00	0.30	0.94	1.56	0.62	0.46	0.30	0.32	0.00	
5000	0.00	0.49	0.30	1.38	3.57	4.09	5.00	4.18	4.29	1.05	0.32	0.60	
5500	0.59	0.66	2.55	3.83	4.46	1.89	0.16	0.77	3.22	2.25	1.44	0.30	
6000	2.23	3.61	6.15	5.97	1.78	0.16	0.00	0.00	0.15	6.31	5.26	4.77	
6500	1.78	1.64	1.35	1.23	0.00	0.00	0.00	0.00	0.00	0.30	0.80	1.49	
Total	673	609	667	653	673	636	640	646	652	666	627	671	7813

Figure 14-7

CLIMATOLOGY ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH													
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total	
-3500	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
-3000	0.00	0.00	0.00	0.15	0.15	0.16	0.00	0.15	0.00	0.00	0.00	0.00		
-2500	0.00	0.16	0.00	0.15	0.00	0.31	0.16	0.00	0.00	0.00	0.16	0.00		
-2000	0.15	0.00	0.15	0.00	1.19	1.42	1.25	0.77	0.15	0.45	0.16	0.00		
-1500	2.08	0.82	3.90	0.77	6.09	4.09	6.88	3.10	2.30	6.46	0.48	0.75		
-1000	10.25	8.70	24.14	12.71	19.02	13.36	12.03	11.61	15.34	17.87	6.06	7.90		
-500	37.00	36.45	25.04	21.44	24.96	24.06	20.16	23.22	24.08	23.87	23.44	31.89		
0	27.79	28.57	15.89	24.81	16.34	23.43	23.91	25.08	23.16	20.27	29.82	24.74		
500	9.06	9.03	9.75	13.48	9.96	9.91	13.75	14.24	11.50	9.16	15.79	15.20		
1000	5.35	4.60	4.65	6.74	4.46	6.45	6.41	6.35	6.75	5.56	9.09	5.96		
1500	2.08	2.63	2.40	4.29	3.12	4.09	4.38	4.18	4.29	2.70	3.51	3.13		
2000	0.59	0.99	1.95	1.84	2.23	2.04	2.19	1.55	1.38	1.80	2.07	2.09		
2500	0.59	0.49	0.75	0.15	0.89	1.89	0.63	1.08	1.38	0.90	0.64	0.30		
3000	0.15	0.66	0.60	0.15	0.74	0.94	0.78	1.24	0.77	0.30	0.48	0.30		
3500	0.30	0.16	0.00	0.31	0.15	0.16	0.47	1.24	0.46	0.30	0.00	0.30		
4000	0.00	0.00	0.30	0.46	0.59	0.31	0.16	0.46	0.31	0.15	0.16	0.30		
4500	0.00	0.33	0.00	0.15	0.15	0.47	0.47	0.15	0.15	0.30	0.32	0.15		
5000	0.15	0.16	0.30	0.00	5.65	3.62	4.84	0.00	0.31	0.45	0.16	0.15		
5500	0.45	0.82	10.04	3.37	4.31	3.30	0.31	3.41	4.91	3.00	0.00	0.00		
6000	4.01	5.42	0.00	9.04	0.00	0.00	1.25	2.17	2.76	6.46	3.51	6.86		
6500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.15	0.00		
Total	673	609	667	653	673	636	640	646	652	666	627	671	7813	

Figure 14-8

HEIGHT DISTRIBUTION

Ellington, TX (LCH RAOB Data) Range = 175 NM Angle = 0 DEG

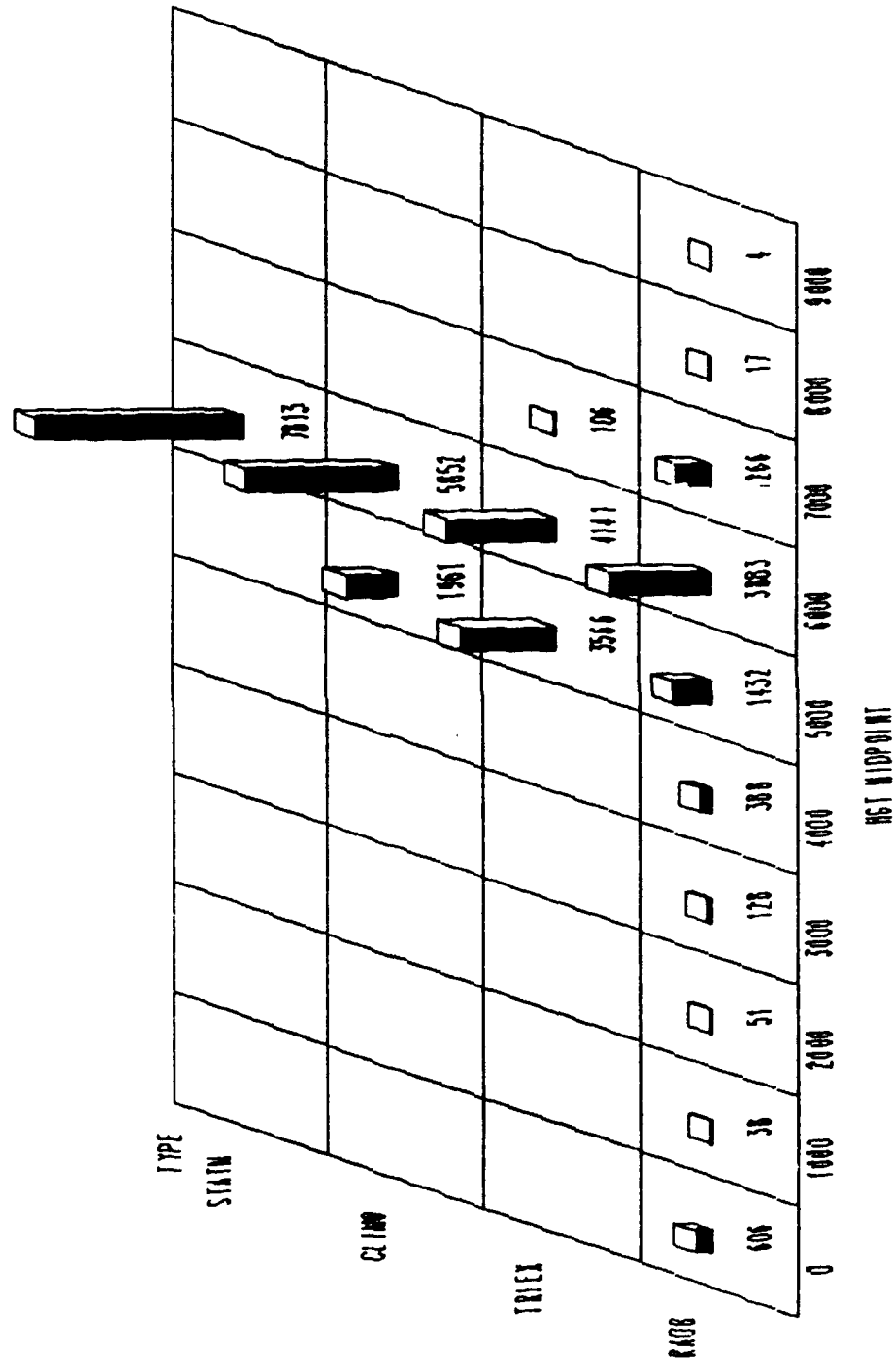


Figure 14-9

RMS ERRORS (meters) FOR
Watford City, ND (GGW RAOB Data)
Range=175 NM Angle=0 DEG

ENTIRE FOR

TRIEXPONENTIAL	CLIMATOLOGY	STANDARD ATMOSPHERE
1151	1151	1206

RMS HEIGHT ERRORS FROM THE TRIEXPONENTIAL MODEL
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	723	635	801
FEB	644	663	624
MAR	784	784	784
APR	880	852	907
MAY	1303	1345	1259
JUN	1599	1528	1666
JUL	1624	1402	1821
AUG	1596	1230	1890
SEP	1298	835	1632
OCT	1016	763	1216
NOV	852	659	1009
DEC	791	827	753

RMS HEIGHT ERRORS FROM CLIMATOLOGY
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	677	613	736
FEB	624	663	581
MAR	781	808	751
APR	890	935	844
MAY	1341	1433	1241
JUN	1605	1621	1589
JUL	1637	1543	1727
AUG	1591	1301	1833
SEP	1286	905	1575
OCT	1006	804	1173
NOV	848	682	987
DC	774	820	725

Figure 15-1

MONTHLY RMS HEIGHT ERRORS
 Watford City, ND (GGWRA08 Data) Range=175 NM Angle=0 DEG

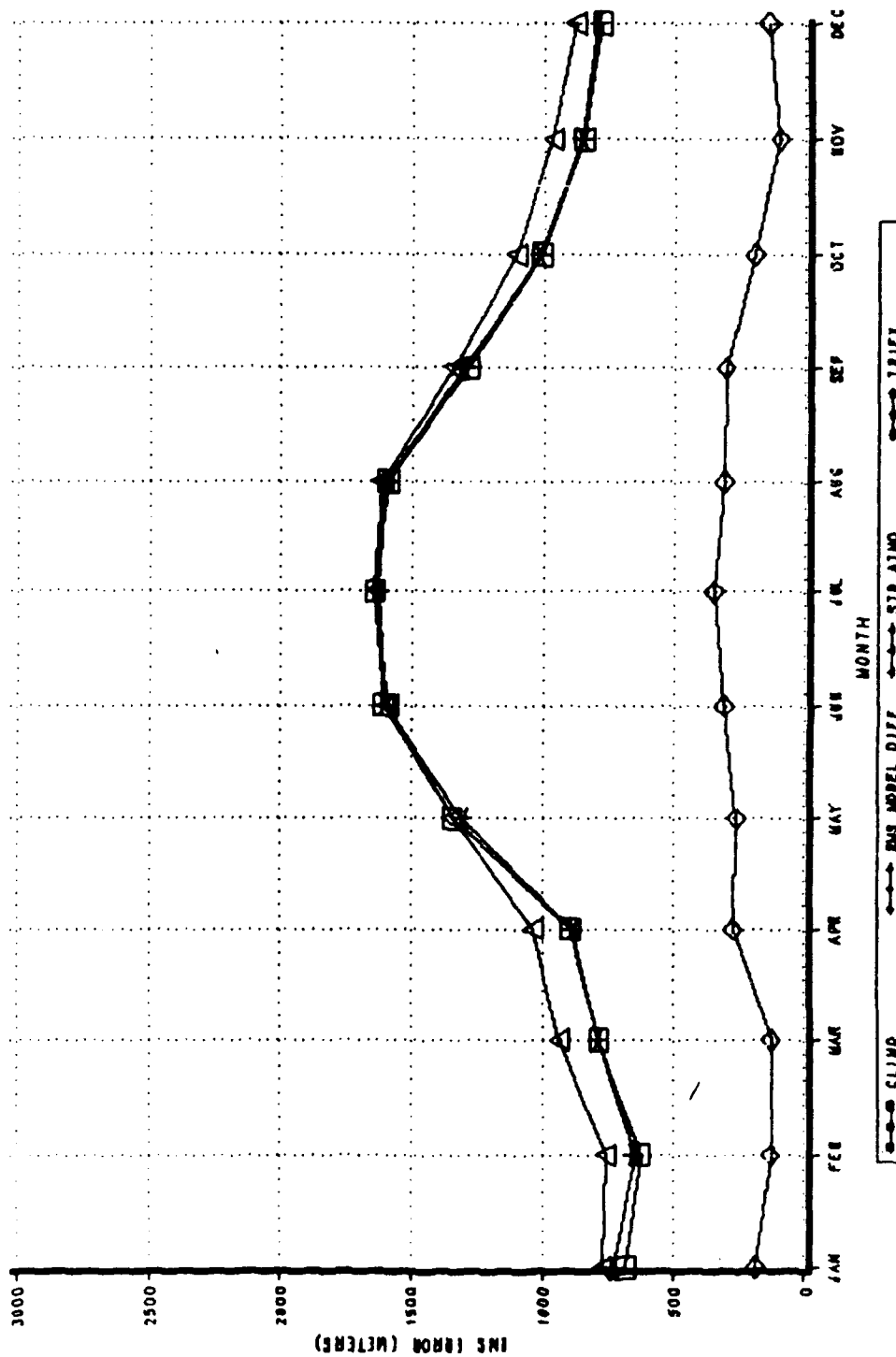


Figure 15-2

MONTHLY RMS HEIGHT ERRORS BY HOUR

Wadford City, MD (GGW RAOB Data)
Range=173 NM Angle=0 DEG

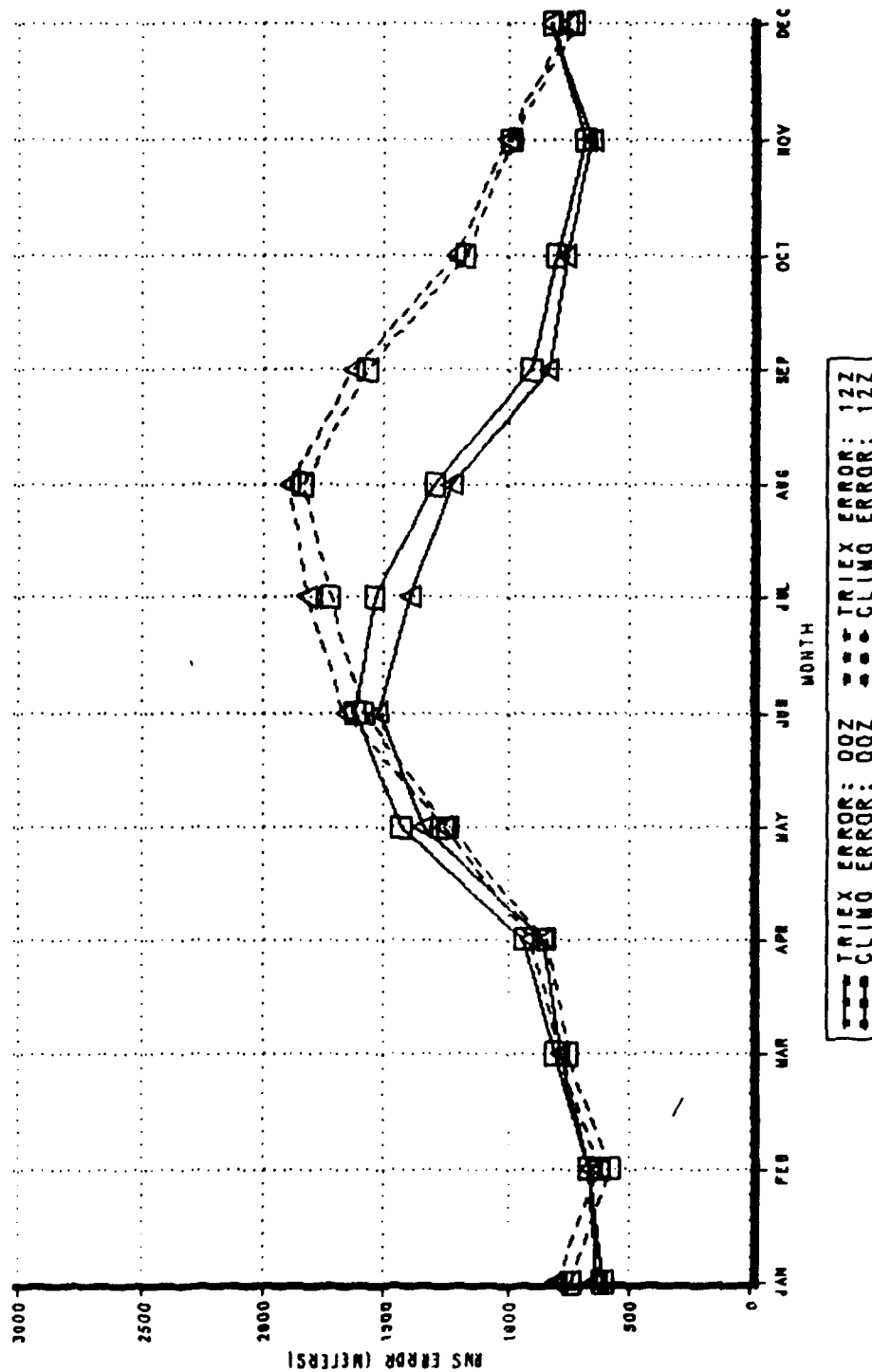


Figure 15-3

ERROR STATISTICS
Watford City, ND (GGW RAOB Data)
Range=175 NM Angle=0 DEG

MODEL	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
TRIEXPONENTIAL	276.61	1117.40	-1968.1	6890.1
CLIMATOLOGY	219.83	1129.47	-2702.1	6972.1
STANDARD ATMOSPHERE	-315.90	1164.03	-2771.4	6036.5

Figure 15-4

TRIEXPONENTIAL MODEL ERRORS
Watford City, ND (GGW RAOB Data)
Range=175 NM Angle=0 DEG

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-2000	1	0.0	1	0.0
-1500	3	0.0	4	0.1
-1000	53	0.7	57	0.7
-500	1245	15.8	1302	16.5
0	4288	54.3	5590	70.8
500	1468	18.6	7058	89.3
1000	388	4.9	7446	94.3
1500	129	1.6	7575	95.9
2000	51	0.6	7626	96.5
2500	33	0.4	7659	96.9
3000	13	0.2	7672	97.1
3500	8	0.1	7680	97.2
4000	11	0.1	7691	97.4
4500	5	0.1	7696	97.4
5000	5	0.1	7701	97.5
5500	4	0.1	7705	97.5
6000	52	0.7	7757	98.2
6500	133	1.7	7890	99.9
7000	10	0.1	7900	100.0

CLIMATOLOGY ERRORS

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-2500	1	0.0	1	0.0
-2000	3	0.0	4	0.1
-1500	4	0.1	8	0.1
-1000	117	1.5	125	1.6
-500	1490	18.9	1615	20.4
0	4309	54.5	5924	75.0
500	1223	15.5	7147	90.5
1000	321	4.1	7468	94.5
1500	117	1.5	7585	96.0
2000	48	0.6	7633	96.6
2500	26	0.3	7659	96.9
3000	14	0.2	7673	97.1
3500	9	0.1	7682	97.2
4000	7	0.1	7689	97.3
4500	7	0.1	7696	97.4
5000	1	0.0	7697	97.4
5500	2	0.0	7699	97.5
6000	80	1.0	7779	98.5
6500	85	1.1	7864	99.5
7000	36	0.5	7900	100.0

Figure 15-5

HEIGHT ERROR DISTRIBUTION Waikanae Bay, NZ (GGW RADAR Data) Range=175 NM Angle=0 DEG

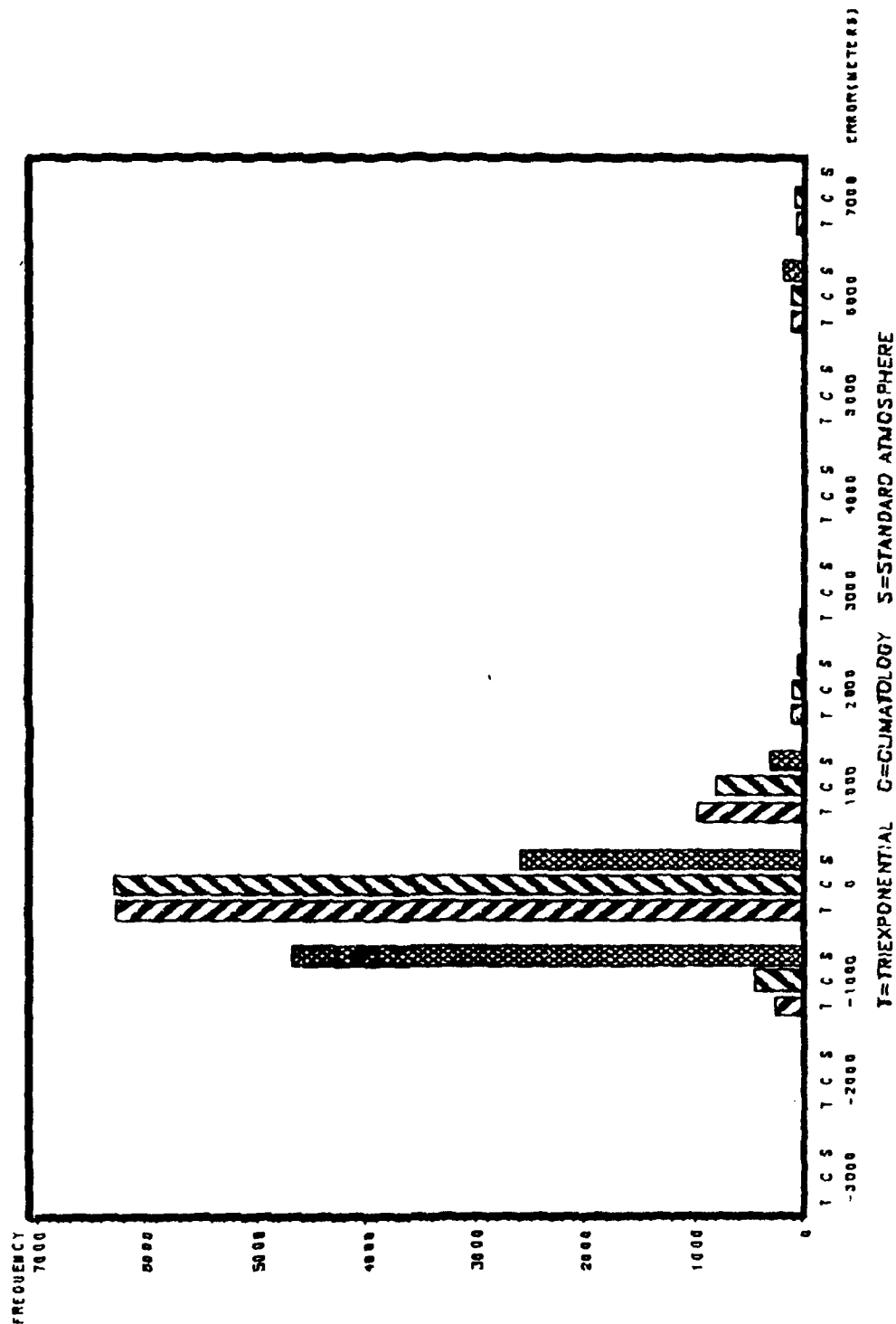


Figure 15-6

TRIEXPONENTIAL MC EL ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
-2000	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	
-1500	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.15	0.00	0.15	0.00	0.00	
-1000	0.00	0.00	0.15	0.00	0.90	1.54	1.64	1.65	1.23	0.60	0.31	0.00	
-500	3.26	5.30	8.63	11.98	20.12	22.73	33.58	33.83	23.89	12.89	7.65	4.48	
0	57.27	60.76	66.37	62.37	52.40	43.16	35.52	35.18	50.38	60.57	66.36	61.64	
500	30.86	26.16	17.56	18.43	14.26	17.05	12.24	13.02	12.10	15.74	19.27	26.72	
1000	5.79	5.79	3.87	3.53	5.41	5.53	5.67	5.84	5.21	4.80	2.75	4.78	
1500	1.48	0.99	1.19	1.08	1.50	2.76	2.39	1.95	2.14	1.95	1.07	1.04	
2000	0.45	0.17	0.89	0.46	0.90	0.46	1.64	0.90	0.92	0.45	0.31	0.15	
2500	0.15	0.00	0.15	0.46	0.75	0.46	0.90	0.75	0.31	0.60	0.46	0.00	
3000	0.00	0.17	0.00	0.15	0.30	0.15	0.15	0.60	0.15	0.00	0.31	0.00	
3500	0.00	0.00	0.00	0.00	0.00	0.31	0.00	0.30	0.00	0.30	0.31	0.00	
4000	0.00	0.00	0.15	0.15	0.00	0.15	0.0	0.30	0.31	0.15	0.00	0.15	
4500	0.00	0.17	0.00	0.00	0.00	0.15	0.00	0.45	0.00	0.00	0.00	0.00	
5000	0.00	0.00	0.15	0.31	0.00	0.15	0.00	0.00	0.00	0.00	0.15	0.00	
5500	0.00	0.00	0.00	0.00	0.00	0.31	0.30	0.00	0.00	0.00	0.00	0.00	
6000	0.00	0.00	0.00	0.00	0.60	1.84	2.24	2.40	0.77	0.00	0.00	0.00	
6500	0.59	0.50	0.74	0.92	2.40	2.92	2.99	2.69	2.45	1.80	1.07	1.04	
7000	0.15	0.00	0.15	0.15	0.45	0.31	0.15	0.00	0.15	0.00	0.00	0.00	
Total	674	604	672	651	666	651	670	668	653	667	654	670	7900

Figure 15-7

CLIMATOLOGY ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												Total
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
-2500	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	
-2000	0.00	0.00	0.00	0.00	0.00	0.15	0.15	0.00	0.00	0.15	0.00	0.00	
-1500	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.45	0.00	0.00	0.00	0.00	
-1000	0.59	0.00	0.60	0.15	1.20	2.76	3.43	4.34	3.22	0.90	0.46	0.00	
-500	13.20	12.09	20.83	17.82	17.12	28.26	24.78	25.15	22.82	17.54	12.08	14.18	
0	61.57	63.08	58.18	57.76	52.70	41.32	44.33	44.16	47.01	59.82	63.61	61.49	
500	17.95	19.04	13.84	17.51	16.67	13.36	12.39	10.93	15.16	13.19	17.28	18.81	
1000	4.45	4.14	3.42	3.38	4.95	4.61	4.63	4.34	5.21	3.45	2.91	3.28	
1500	1.04	0.66	1.04	0.92	1.95	2.61	2.09	2.40	1.38	1.65	1.07	0.90	
2000	0.45	0.17	0.74	0.31	0.75	0.31	1.34	0.90	1.23	0.75	0.15	0.15	
2500	0.00	0.00	0.15	0.46	0.60	0.46	0.45	0.60	0.31	0.30	0.61	0.00	
3000	0.00	0.17	0.00	0.15	0.45	0.31	0.15	0.45	0.00	0.15	0.31	0.00	
3500	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.45	0.15	0.15	0.31	0.00	
4000	0.00	0.00	0.15	0.15	0.00	0.00	0.00	0.45	0.00	0.15	0.00	0.15	
4500	0.00	0.17	0.15	0.15	0.00	0.15	0.00	0.30	0.15	0.00	0.00	0.00	
5000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	
5500	0.00	0.00	0.00	0.00	0.00	0.31	0.00	0.00	0.00	0.00	0.00	0.00	
6000	0.00	0.00	0.00	0.00	0.15	2.92	3.43	3.59	1.99	0.00	0.00	0.00	
6500	0.74	0.50	0.89	0.46	1.35	2.46	2.39	0.00	0.77	1.20	1.07	1.04	
7000	0.00	0.00	0.00	0.77	1.95	0.00	0.00	1.50	0.61	0.60	0.00	0.00	
Total	674	604	672	651	666	651	670	668	653	667	654	670	7900

Figure 15-8

HEIGHT DISIRIBUTION

Watford City, ND (GGW RAOB Data) Range = 175 NM Angle = 0 DEG

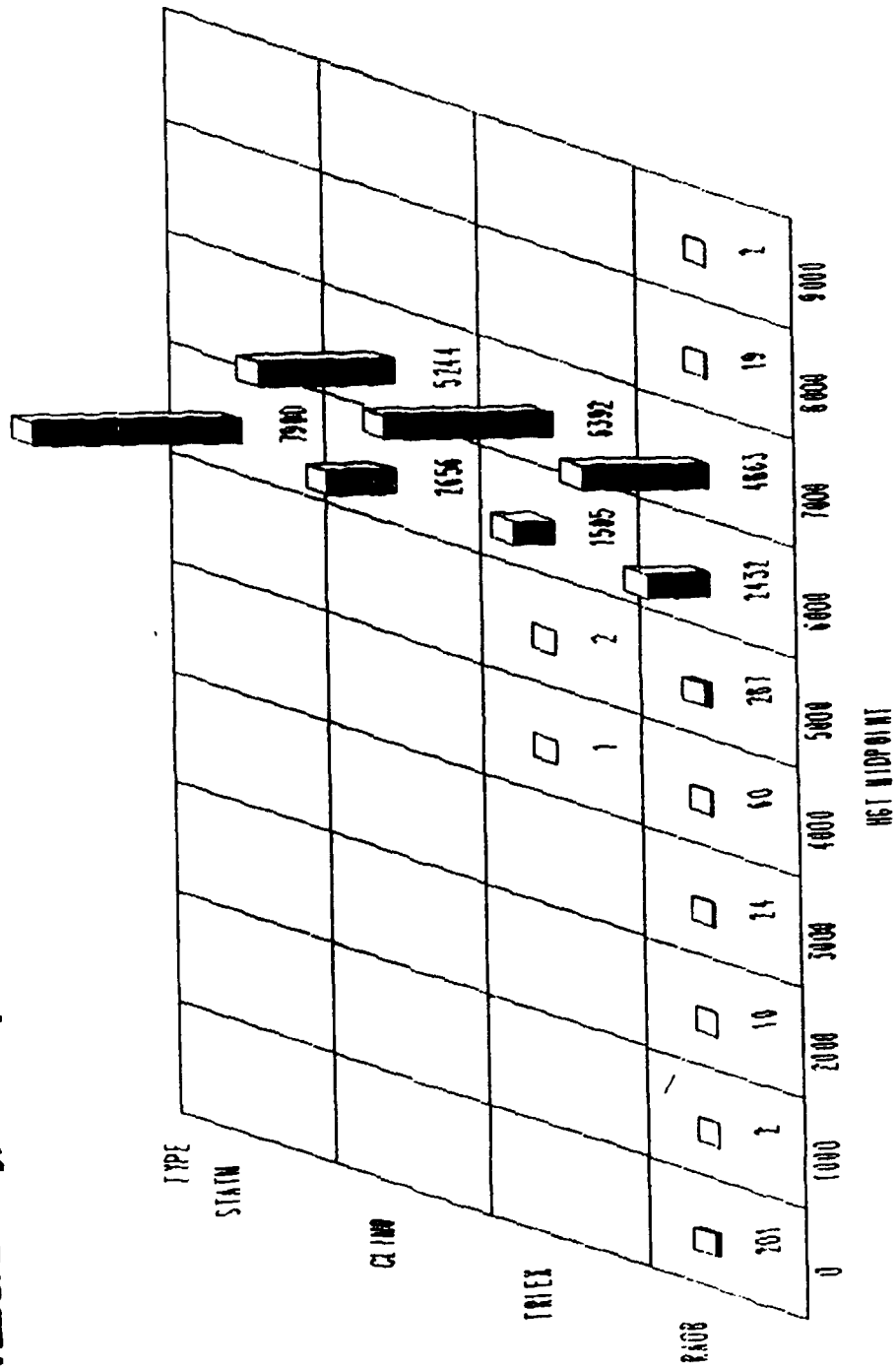


Figure 15-9

RMS ERRORS (meters) FOR
Cross City, FL (AQQ RAOB Data)
Range=175 NM Angle=0 DEG

ENTIRE POR

TRIEXPONENTIAL	CLIMATOLOGY	STANDARD ATMOSPHERE
1894	1880	1919

RMS HEIGHT ERRORS FROM THE TRIEXPONENTIAL MODEL
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	1720	1471	1938
FEB	2046	1542	2450
MAR	1921	1558	2225
APR	2648	2179	3040
MAY	1804	1518	2048
JUN	1713	1509	1894
JUL	1431	1258	1589
AUG	1454	1430	1479
SEP	1570	1361	1754
OCT	2129	2258	1993
NOV	2074	2203	1938
DEC	1922	2006	1835

RMS HEIGHT ERRORS FROM CLIMATOLOGY
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	1686	1421	1916
FEB	1966	1482	2355
MAR	1875	1538	2159
APR	2471	2001	2859
MAY	1839	1511	2115
JUN	1789	1547	2000
JUL	1417	1218	1596
AUG	1413	1417	1408
SEP	1633	1380	1851
OCT	2118	2145	2091
NOV	2174	2196	2153
DEC	1939	1966	1912

Figure 16-1

MONTHLY RMS HEIGHT ERRORS
Gross City, FL (AQQ RAOB Data) Range=175 NM Angle=0 DEG

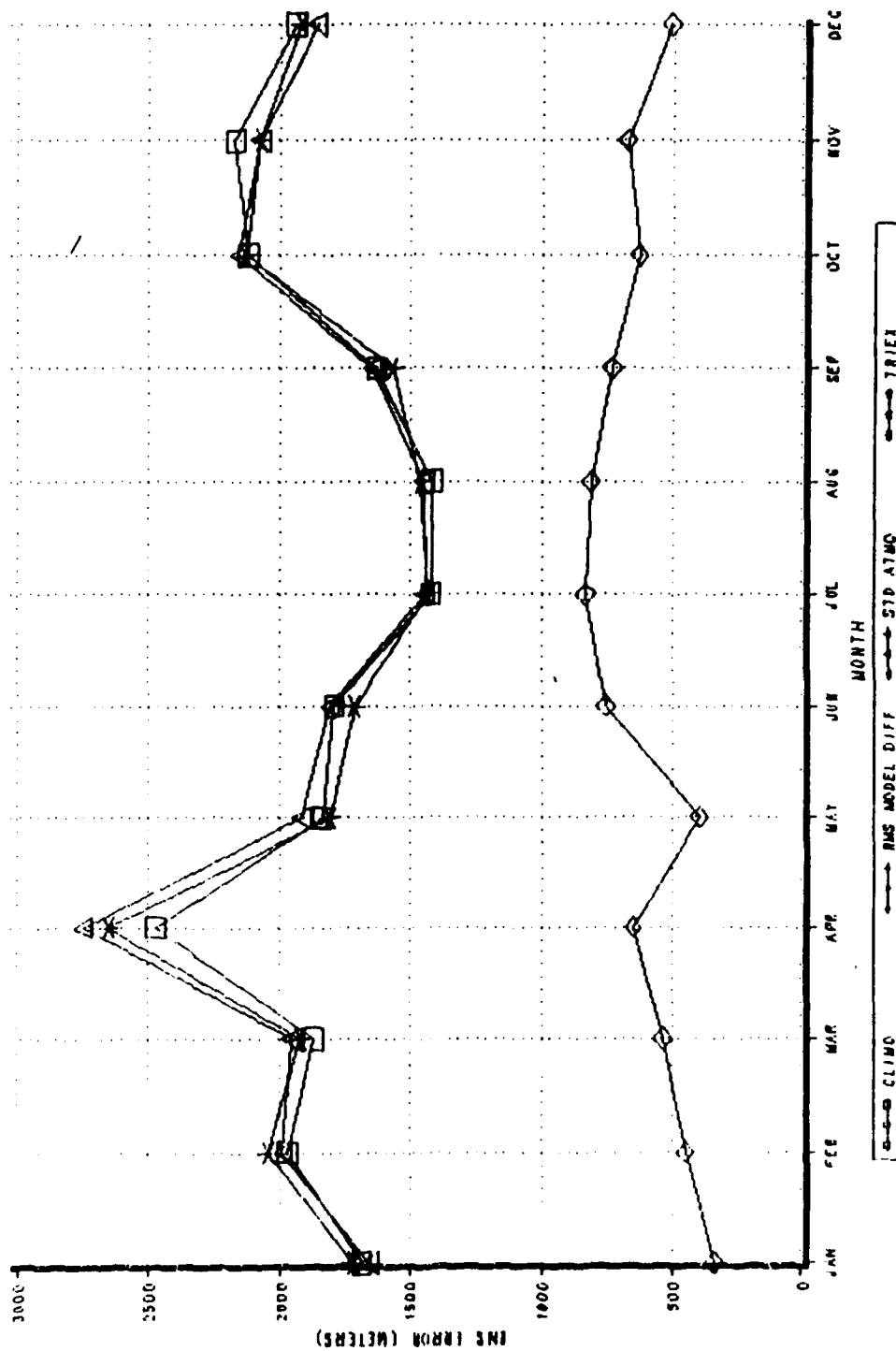


Figure 16-2

MONTHLY RMS HEIGHT ERRORS BY HOUR

Gross City, FL (AQQ RAOB Data)
Range=17.5 NM Angle=0 DEG

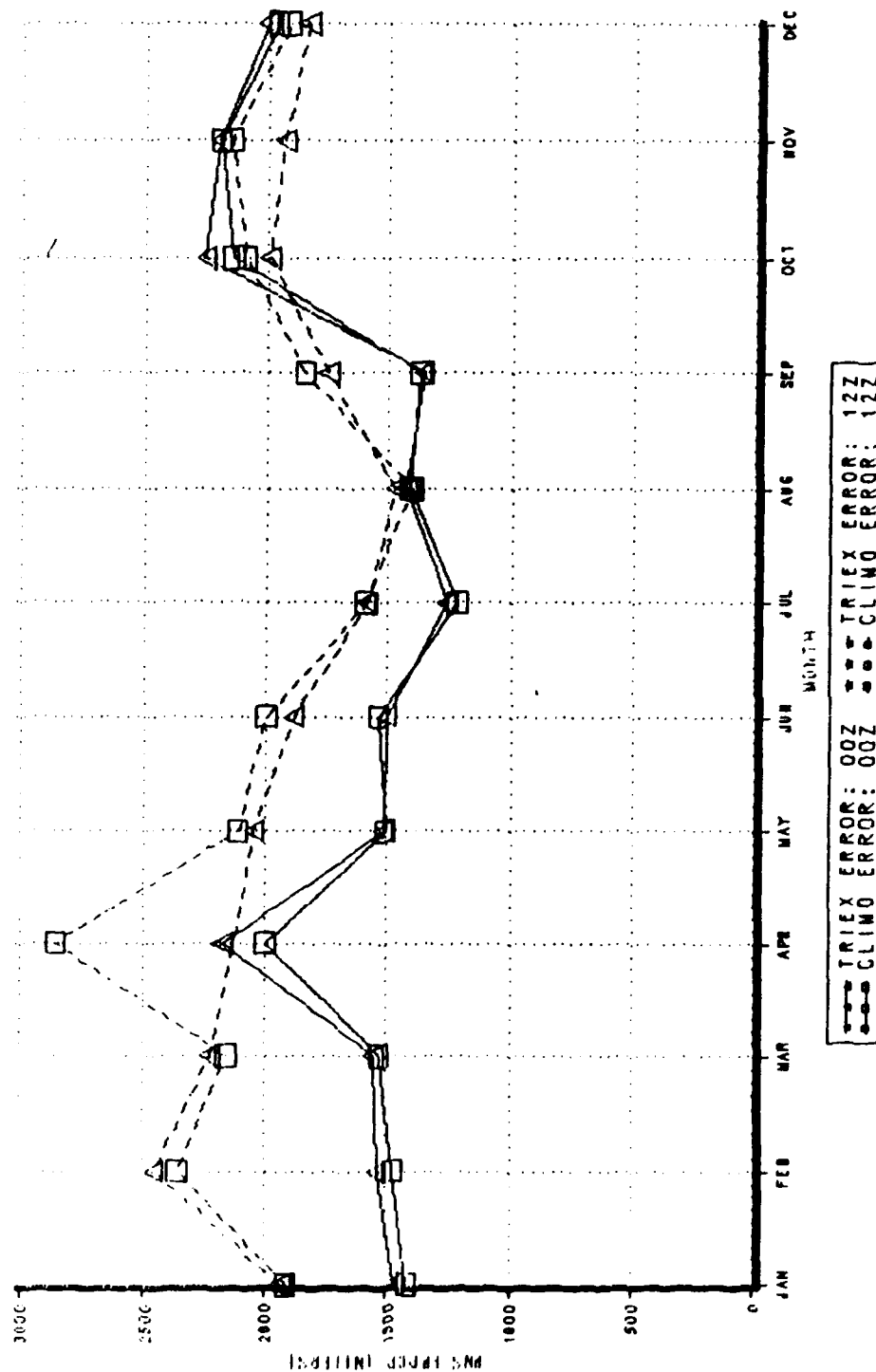


Figure 16-3

ERROR STATISTICS
 Cross City, FL (AQQ RAOB Data)
 Range=175 NM Angle=0 DEG

MODEL	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
TRIEXPONENTIAL	270.39	1875.19	-2832.0	6604.0
CLIMATOLOGY	512.45	1809.27	-3947.3	6577.2
STANDARD ATMOSPHERE	43.83	1807.98	-3715.1	5984.1

Figure 16-4

TRIEXPONENTIAL MODEL ERRORS
Cross City, FL (AQQ RAOB Data)
Range=175 NM Angle=0 DEG

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-3000	2	0.0	2	0.0
-2500	6	0.1	8	0.1
-2000	70	0.9	78	1.0
-1500	592	7.5	670	8.5
-1000	1495	19.0	2165	27.5
-500	1737	22.1	3902	49.5
0	1597	20.3	5499	69.8
500	919	11.7	6418	81.5
1000	366	4.6	6784	86.1
1500	201	2.6	6985	88.7
2000	91	1.2	7076	89.8
2500	53	0.7	7129	90.5
3000	26	0.3	7155	90.8
3500	17	0.2	7172	91.0
4000	19	0.2	7191	91.3
4500	22	0.3	7213	91.6
5000	126	1.6	7339	93.2
5500	186	2.4	7525	95.5
6000	275	3.5	7800	99.0
6500	77	1.0	7877	100.0

CLIMATOLOGY ERRORS

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-4000	1	0.0	1	0.0
-3500	1	0.0	2	0.0
-3000	6	0.1	8	0.1
-2500	4	0.1	12	0.2
-2000	24	0.3	36	0.5
-1500	166	2.1	202	2.6
-1000	898	11.4	1100	14.0
-500	1854	23.5	2954	37.5
0	1938	24.6	4892	62.1
500	1190	15.1	6082	77.2
1000	574	7.3	6656	84.5
1500	286	3.6	6942	88.1
2000	112	1.4	7054	89.6
2500	62	0.8	7116	90.3
3000	28	0.4	7144	90.7
3500	26	0.3	7170	91.0
4000	16	0.2	7186	91.2
4500	17	0.2	7203	91.4
5000	52	0.7	7255	92.1
5500	235	3.0	7490	95.1
6000	312	4.0	7802	99.0
6500	75	1.0	7877	100.0

Figure 16-5

HEIGHT ERROR DISTRIBUTION Cross City, FL (AOC RA08 Data) Range=175 NM Angle=0 DEG

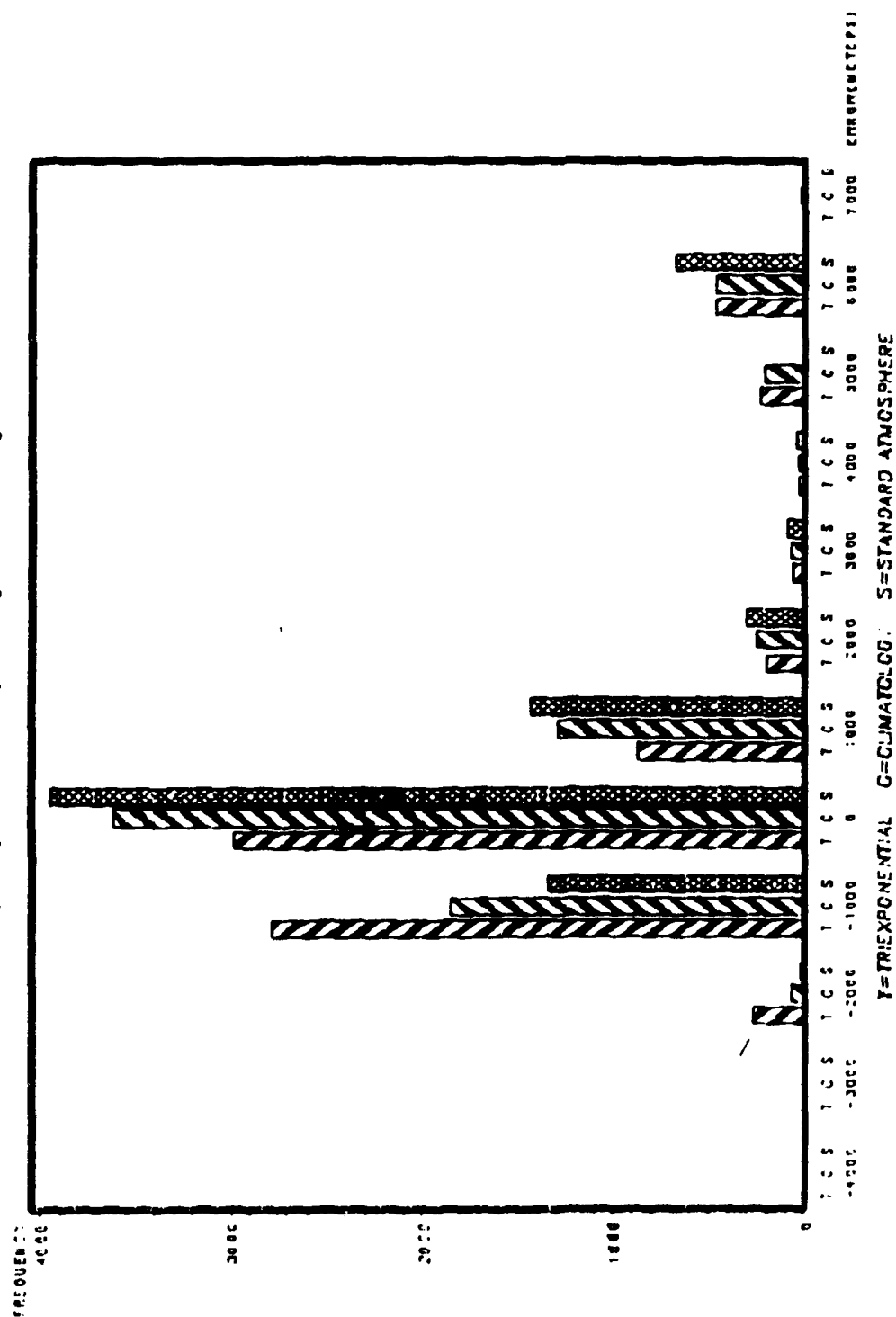


Figure 16-6

TRIEXPONENTIAL MODEL ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												Total
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
-3000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.15	0.00	0.00	0.00	
-2500	0.00	0.00	0.00	0.00	0.00	0.15	0.15	0.15	0.31	0.00	0.16	0.00	
-2000	0.00	0.33	0.00	0.00	0.00	1.69	1.06	4.01	2.31	0.90	0.16	0.15	
-1500	0.59	1.30	1.05	0.62	6.01	14.95	17.12	18.87	13.43	8.67	4.91	2.37	
-1000	9.36	8.14	6.43	6.78	19.97	28.04	38.18	32.99	29.48	18.83	14.58	14.35	
-500	21.40	23.13	20.61	14.95	25.08	24.19	21.52	20.80	22.99	23.32	20.76	25.74	
0	33.73	28.83	29.75	23.42	18.62	13.87	10.30	10.85	13.73	15.84	22.35	22.34	
500	17.68	14.82	19.43	16.02	10.96	5.55	4.70	4.01	6.17	10.16	13.79	16.72	
1000	5.65	6.51	6.43	8.78	5.26	1.39	0.76	2.38	2.16	3.89	7.61	5.18	
1500	3.12	4.07	3.29	5.39	3.30	0.77	0.76	0.45	1.85	3.29	2.22	2.22	
2000	0.89	1.14	2.09	2.16	0.90	0.77	0.30	0.59	0.62	1.94	1.11	1.33	
2500	0.30	1.30	0.60	1.39	0.60	0.92	0.61	0.30	0.31	0.30	0.95	0.59	
3000	0.15	0.16	0.45	0.46	0.30	0.00	0.15	0.15	0.77	0.75	0.48	0.15	
3500	0.15	0.16	0.30	0.31	0.45	0.00	0.00	0.00	0.15	0.60	0.48	0.00	
4000	0.45	0.16	0.45	0.62	0.15	0.15	0.00	0.00	0.15	0.15	0.32	0.30	
4500	0.00	0.16	0.15	0.31	0.30	0.46	0.45	0.74	0.00	0.60	0.00	0.15	
5000	0.00	0.00	0.30	1.23	1.35	4.01	3.18	3.42	3.86	0.75	0.79	0.30	
5500	0.15	1.14	3.14	8.17	4.95	2.47	0.76	0.15	0.77	4.33	1.58	0.74	
6000	3.57	6.03	4.78	8.32	1.80	0.62	0.00	0.00	0.77	5.23	6.02	5.03	
6500	2.82	2.61	0.75	1.08	0.00	0.00	0.00	0.00	0.00	0.45	1.74	2.37	
Total	673	614	669	649	666	649	660	673	648	669	631	676	7877

Figure 16-7

CLIMATOLOGY ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
-4000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	
-3500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	
-3000	0.00	0.33	0.00	0.00	0.00	0.15	0.00	0.15	0.15	0.00	0.16	0.00	
-2500	0.00	0.16	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	
-2000	0.00	0.00	0.15	1.85	0.30	0.15	0.00	0.15	0.00	0.75	0.16	0.15	
-1500	0.15	1.14	4.63	7.70	1.35	1.23	0.45	0.89	2.93	4.19	0.48	0.15	
-1000	7.58	21.17	19.88	16.33	13.51	8.78	7.27	10.85	8.18	13.60	4.75	5.33	
-500	30.91	30.94	26.16	17.72	26.13	22.19	27.58	24.07	24.07	17.94	15.53	19.23	
0	31.65	18.89	19.13	17.87	22.37	29.12	29.09	30.91	26.54	21.38	19.81	27.66	
500	13.82	8.79	10.46	7.09	13.66	16.33	18.03	16.34	16.67	16.14	22.03	21.60	
1000	4.90	4.40	5.23	5.55	6.16	8.32	7.73	6.54	8.18	6.28	14.26	10.06	
1500	2.67	1.95	3.14	3.70	4.50	2.77	2.88	2.97	2.93	5.08	7.29	3.70	
2000	0.45	1.14	0.75	1.39	1.80	1.23	1.21	1.04	2.47	0.90	2.69	2.07	
2500	0.74	0.81	0.60	0.46	0.90	0.92	0.30	0.89	0.77	1.35	0.95	0.74	
3000	0.15	0.00	0.30	0.92	0.15	0.62	0.45	0.45	0.31	0.30	0.48	0.15	
3500	0.15	0.33	0.45	0.00	0.45	0.31	0.61	0.30	0.46	0.45	0.32	0.15	
4000	0.30	0.00	0.00	0.62	0.30	0.15	0.00	0.00	0.46	0.00	0.32	0.30	
4500	0.00	0.33	0.15	0.15	0.15	0.31	0.00	0.15	0.15	0.75	0.48	0.00	
5000	0.00	0.16	0.30	6.78	0.15	0.00	0.00	0.00	0.15	0.15	0.16	0.15	
5500	0.30	2.61	3.44	11.71	3.45	2.93	0.91	2.23	1.39	6.43	0.32	0.15	
6000	6.24	6.84	5.23	0.00	4.65	4.47	3.48	1.93	4.01	0.60	5.71	4.59	
6500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.74	4.12	3.55	
Total	673	614	669	649	666	649	660	673	648	669	631	676	7877

Figure 16-8

HEIGHT DISTRIBUTION

Cross City, FL (AQQ RAOB Data) Range=175 NM Angle=0 DEG

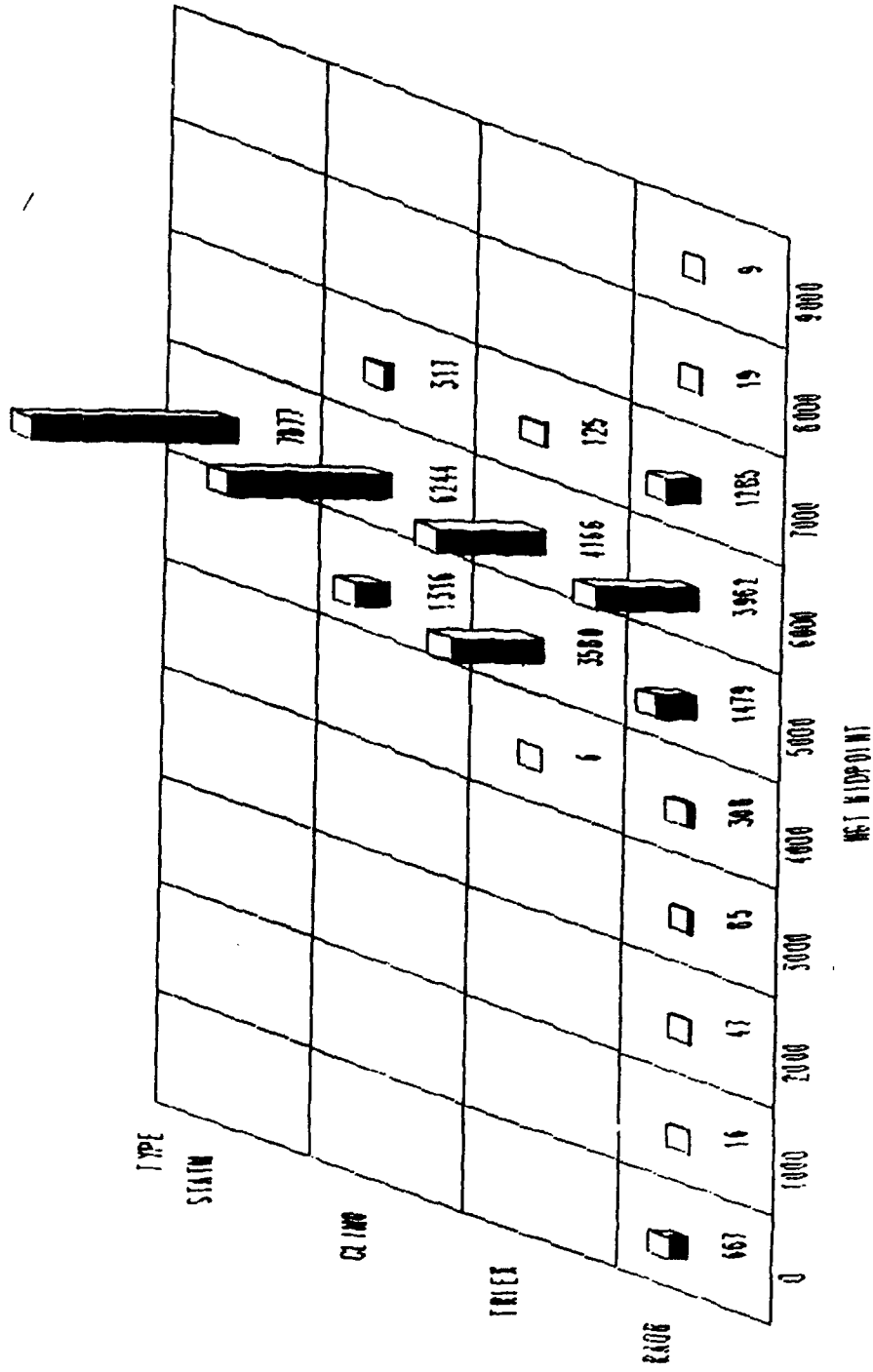


Figure 16-9

RMS ERRORS (meters) FOR
 Slidell, LA (BVE RAOB Data)
 Range=175 NM Angle=0 DEG

ENTIRE POR

TRIEXPONENTIAL	CLIMATOLOGY	STANDARD ATMOSPHERE
1865	1812	1976

RMS HEIGHT ERRORS FROM THE TRIEXPONENTIAL MODEL
 BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	1840	1701	1971
FEB	1838	1683	1983
MAR	2191	1826	2504
APR	2382	2011	2695
MAY	1824	1616	2019
JUN	1829	1842	1816
JUL	1532	1434	1624
AUG	1337	1372	1301
SEP	1686	1796	1567
OCT	1892	1568	2172
NOV	1891	1694	2072
DEC	1919	1925	1913

RMS HEIGHT ERRORS FROM CLIMATOLOGY
 BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	1808	1646	1958
FEB	1793	1622	1950
MAR	2065	1762	2329
APR	2227	1951	2466
MAY	1806	1648	1956
JUN	1847	1856	1838
JUL	1591	1482	1693
AUG	1357	1407	1304
SEP	1703	1826	1568
OCT	1796	1481	2069
NOV	1803	1612	1978
DEC	1810	1773	1848

Figure 17-1

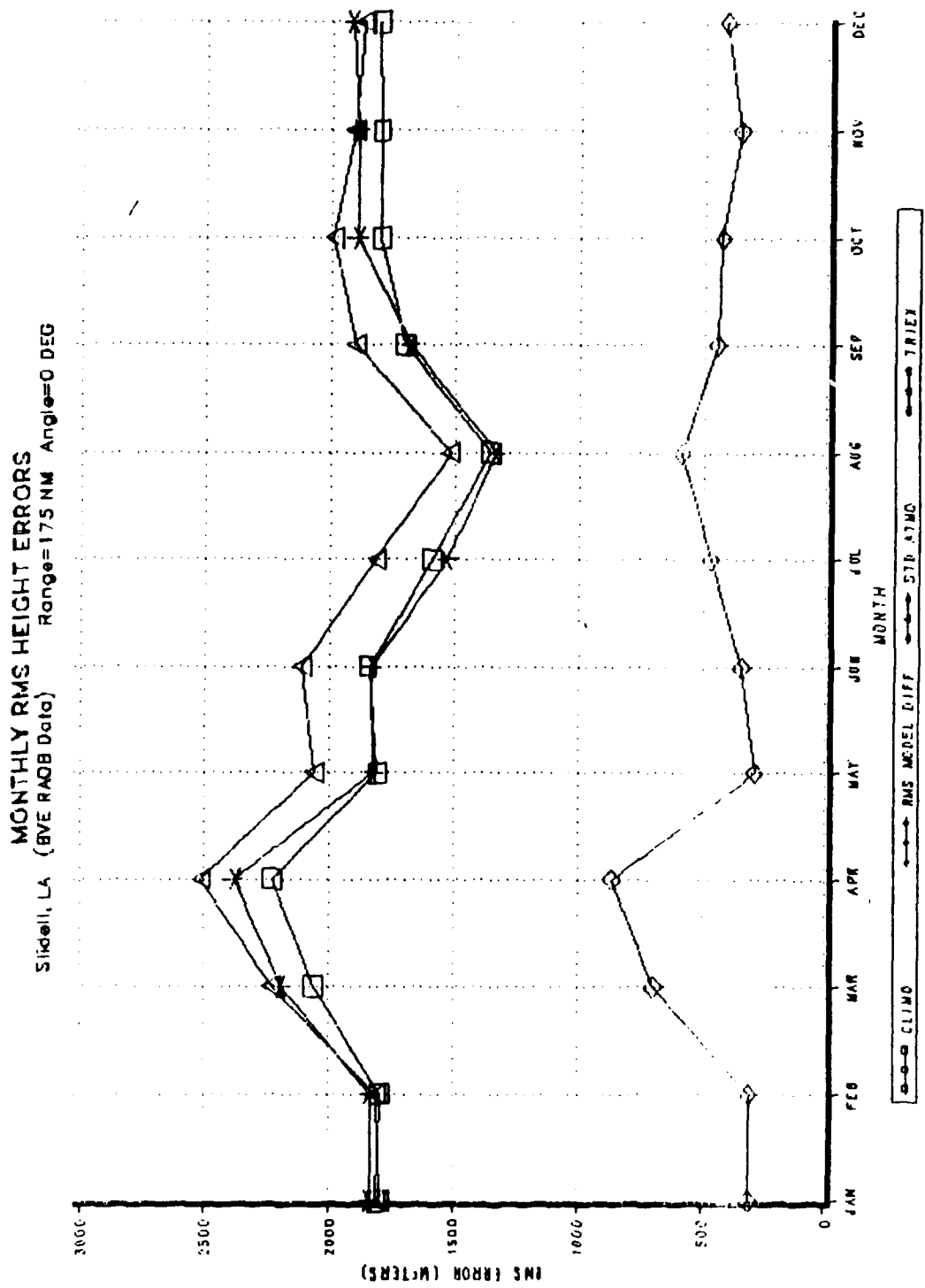


Figure 17-2

MONTHLY RMS HEIGHT ERRORS BY HOUR

Slidell, LA (BVE RA08 Ddfo)
Range=173 NM Angle=0 DEG

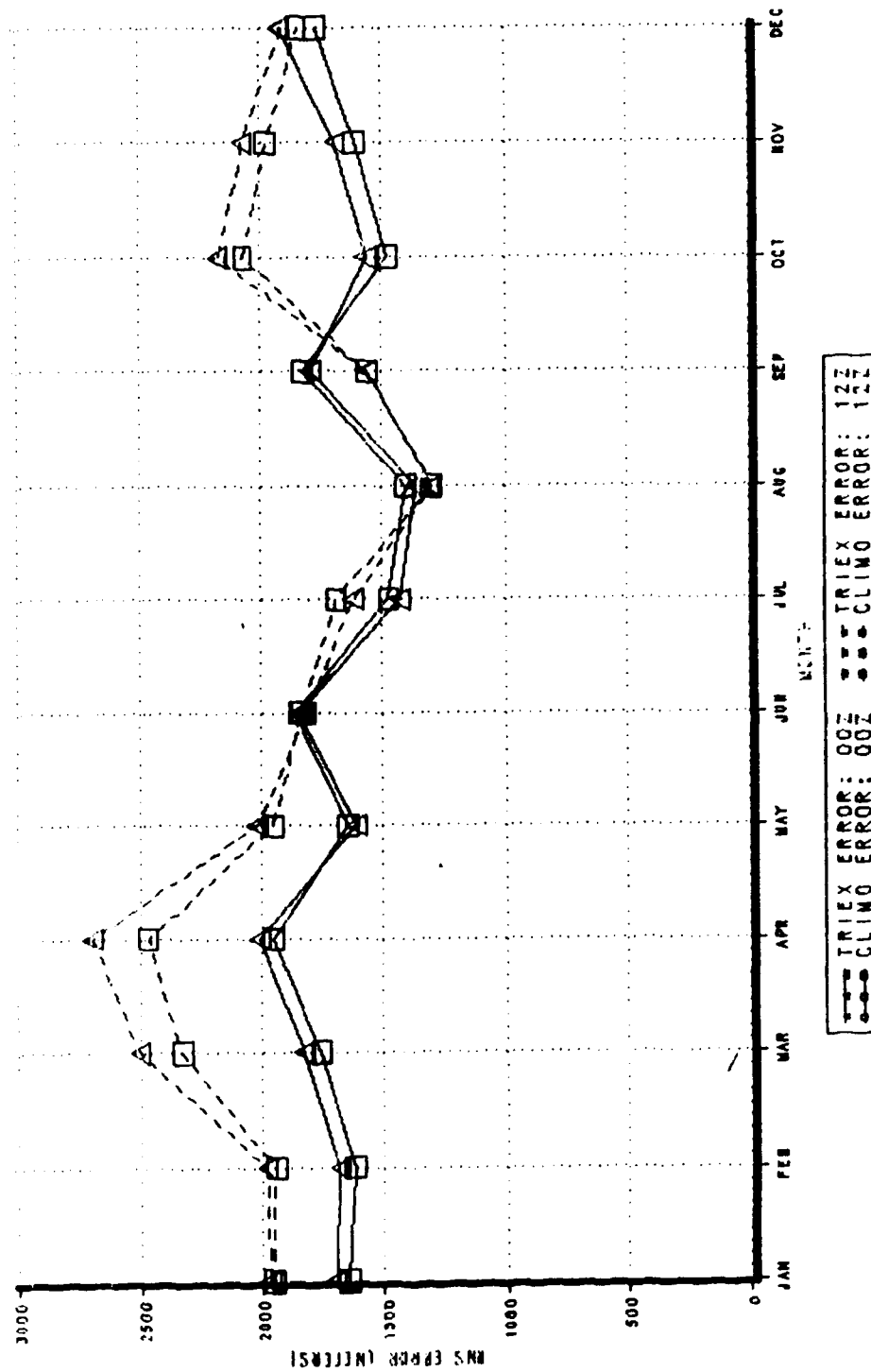


Figure 17-3

ERROR STATISTICS
Slidell, LA (BVE RAOB Data)
Range=175 NM Angle=0 DEG

MODEL	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
TRIEXPONENTIAL	369.46	1827.71	-2657.4	6441.5
CLIMATOLOGY	348.02	1778.14	-4095.4	6146.4
STANDARD ATMOSPHERE	841.77	1787.35	-3526.4	5970.7

Figure 17-4

TRIEXPONENTIAL MODEL ERRORS
Slidell, LA (BVE RAOB Data)
Range=175 NM Angle=0 DEG

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-2500	6	0.1	6	0.1
-2000	26	0.3	32	0.4
-1500	326	4.3	358	4.8
-1000	1301	17.4	1659	22.1
-500	1787	23.8	3446	46.0
0	1644	21.9	5090	67.9
500	860	11.5	5950	79.4
1000	405	5.4	6355	84.8
1500	224	3.0	6579	87.8
2000	106	1.4	6685	89.2
2500	59	0.8	6744	90.0
3000	39	0.5	6783	90.5
3500	32	0.4	6815	90.9
4000	16	0.2	6831	91.1
4500	28	0.4	6859	91.5
5000	173	2.3	7032	93.8
5500	204	2.7	7236	96.5
6000	242	3.2	7478	99.8
6500	18	0.2	7496	100.0

CLIMATOLOGY ERRORS

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-4000	1	0.0	1	0.0
-3500	5	0.1	6	0.1
-3000	3	0.0	9	0.1
-2500	11	0.1	20	0.3
-2000	41	0.5	61	0.8
-1500	275	3.7	336	4.5
-1000	1118	14.9	1454	19.4
-500	2064	27.5	3518	46.9
0	1677	22.4	5195	69.3
500	777	10.4	5972	79.7
1000	416	5.5	6388	85.2
1500	216	2.9	6604	88.1
2000	87	1.2	6691	89.3
2500	60	0.8	6751	90.1
3000	41	0.5	6792	90.6
3500	24	0.3	6816	90.9
4000	16	0.2	6832	91.1
4500	47	0.6	6879	91.8
5000	138	1.8	7017	93.6
5500	367	4.9	7384	98.5
6000	112	1.5	7496	100.0

Figure 17-5

Sidell, LA (BYE RA0BD0to) Range=175 NM Angle=0 DEG HEIGHT ERROR DISTRIBUTION

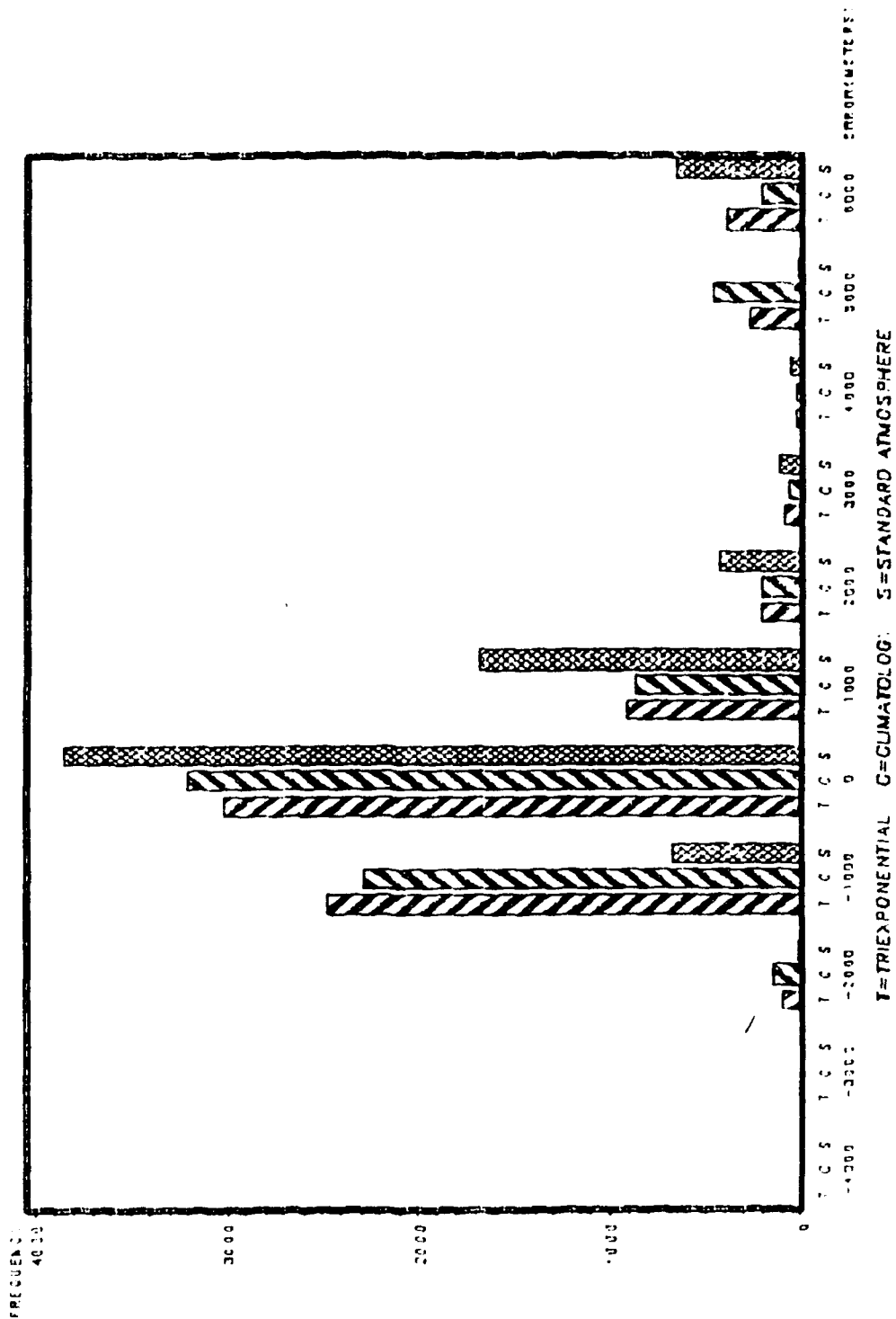


Figure 17-6

TRIEXPONENTIAL MODEL ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												Total
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
-2500	0.00	0.34	0.00	0.32	0.00	0.00	0.00	0.00	0.16	0.15	0.00	0.00	
-2000	0.16	0.17	0.16	0.32	0.16	0.79	0.82	0.47	0.48	0.31	0.17	0.16	
-1500	3.27	4.66	2.34	1.46	0.94	5.40	7.35	10.61	5.65	3.40	3.83	3.35	
-1000	10.58	11.55	6.71	10.86	15.54	23.49	25.98	29.95	24.35	15.90	16.33	16.91	
-500	19.28	21.21	22.78	20.91	25.59	22.38	25.98	28.39	28.55	27.93	22.50	20.26	
0	30.64	28.45	28.71	22.04	22.29	19.84	16.83	12.79	15.65	18.98	23.00	24.24	
500	15.55	13.0	13.26	13.29	11.77	9.84	8.66	6.24	8.55	10.34	13.50	13.72	
1000	6.84	7.07	5.93	5.83	6.59	3.81	2.45	4.21	2.58	6.17	6.67	6.70	
1500	3.58	2.59	2.81	4.05	3.77	1.75	3.10	1.87	3.23	3.70	1.67	3.67	
2000	0.78	1.03	2.34	3.08	1.41	0.79	0.98	0.47	1.61	1.39	1.50	1.59	
2500	0.78	0.69	1.09	0.81	1.10	0.63	0.65	0.31	0.81	1.23	0.83	0.48	
3000	0.16	0.52	0.94	0.49	0.31	0.48	0.49	0.62	0.32	1.08	0.67	0.16	
3500	0.47	1.03	0.78	0.49	1.26	0.32	0.00	0.00	0.32	0.00	0.50	0.00	
4000	0.16	0.34	0.00	0.32	0.47	0.32	0.33	0.00	0.00	0.31	0.17	0.16	
4500	0.16	0.00	0.00	0.65	0.31	0.63	0.82	0.78	0.97	0.00	0.17	0.00	
5000	0.00	0.00	0.78	1.94	2.83	7.62	5.23	3.28	3.87	1.54	0.17	0.32	
5500	1.24	0.86	3.59	7.62	5.02	1.75	0.16	0.00	2.58	5.40	3.33	0.96	
6000	5.13	5.69	7.33	5.51	0.63	0.16	0.16	0.00	0.32	2.16	4.83	7.02	
6500	1.24	0.69	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.32	
Total	643	580	641	617	637	630	612	641	620	648	600	627	7496

Figure 17-7

CLIMATOLOGY ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												Total
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
-4000	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
-3500	0.00	0.34	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.31	0.00	0.00	
-3000	0.00	0.00	0.00	0.16	0.00	0.16	0.00	0.00	0.16	0.00	0.00	0.00	
-2500	0.31	0.17	0.31	0.65	0.16	0.00	0.00	0.00	0.00	0.00	0.17	0.00	
-2000	0.31	0.52	0.94	3.89	0.16	0.16	0.33	0.00	0.00	0.15	0.00	0.16	
-1500	0.31	1.55	12.17	18.31	1.26	1.59	0.98	0.31	1.13	2.62	1.17	2.55	
-1000	10.26	13.10	26.83	24.64	12.40	13.33	9.97	10.61	9.35	16.20	13.50	18.50	
-500	26.75	33.28	22.62	14.42	27.79	27.94	26.14	24.65	27.42	35.03	33.33	31.42	
0	29.39	23.45	11.70	9.72	22.45	24.29	26.47	32.14	28.06	18.98	20.67	21.05	
500	13.53	10.17	5.30	4.86	11.77	10.32	13.56	12.17	12.74	7.87	13.00	9.25	
1000	5.60	4.48	3.59	3.40	7.06	6.51	8.33	7.49	6.45	4.78	4.50	4.31	
1500	3.58	2.41	1.87	1.62	3.92	2.70	3.59	5.30	2.58	2.16	1.83	2.87	
2000	1.09	0.69	0.94	1.13	1.10	0.63	1.96	1.56	1.77	1.08	1.17	0.80	
2500	0.31	0.69	1.09	0.65	0.94	0.79	0.82	0.62	1.77	0.62	1.00	0.32	
3000	0.62	0.69	0.31	0.49	0.47	0.95	0.65	0.78	0.32	0.77	0.50	0.00	
3500	0.16	0.69	0.16	0.16	1.10	0.00	0.49	0.16	0.16	0.31	0.50	0.00	
4000	0.00	0.52	0.00	0.00	0.63	0.32	0.16	0.16	0.32	0.00	0.17	0.32	
4500	0.16	0.00	0.31	6.00	0.00	0.79	0.00	0.00	0.00	0.15	0.17	0.00	
5000	0.00	0.00	4.06	9.56	0.94	5.56	0.65	0.16	0.00	1.08	0.00	0.00	
5500	0.16	0.69	7.80	0.00	7.85	3.97	5.88	3.90	7.74	7.87	8.33	4.31	
6000	7.47	6.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.15	
Total	643	580	641	617	637	630	612	641	620	648	600	627	7496

Figure 17-8

HEIGHT DISTRIBUTION

Slidell, LA (BVE RAOB Data) Range = 175 NM Angle = 0 DEG

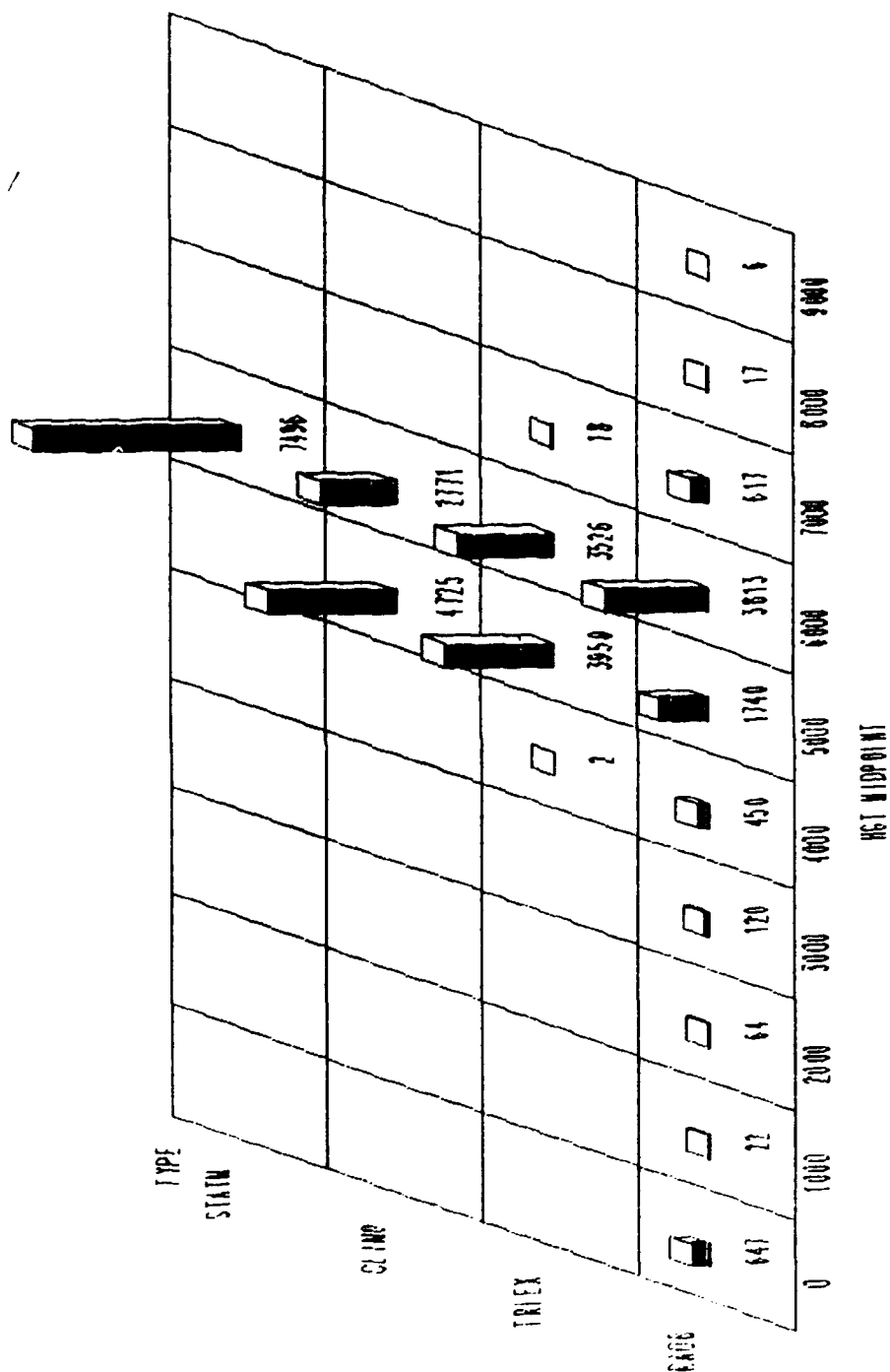


Figure 17-9

RMS ERRORS (meters) FOR
Fort Fisher, NC (CHS RAOB Data)
Range=175 NM Angle=0 DEG

ENTIRE FOR

TRIEXPONENTIAL	CLIMATOLOGY	STANDARD ATMOSPHERE
2009	1994	2027

RMS HEIGHT ERRORS FROM THE TRIEXPONENTIAL MODEL
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	1835	1533	2096
FEB	2028	1578	2395
MAR	2135	1438	2654
APR	2620	1879	3185
MAY	2212	1521	2723
JUN	1704	1410	1952
JUL	1700	1600	1793
AUG	1389	1218	1540
SEP	1453	1292	1597
OCT	2182	1867	2457
NOV	2118	1767	2419
DEC	2356	2029	2648

RMS HEIGHT ERRORS FROM CLIMATOLOGY
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	1775	1538	1986
FEB	1976	1600	2292
MAR	2068	1478	2523
APR	2456	1868	2922
MAY	2143	1572	2581
JUN	1831	1510	2101
JUL	1840	1717	1954
AUG	1387	1067	1644
SEP	1482	1314	1631
OCT	2239	1867	2558
NOV	2185	1771	2532
DEC	2264	1925	2562

Figure 18-1

MONTHLY RMS HEIGHT ERRORS
 Fort Fisher, NC (CHS RA08 Data) Range=17.5 NM Angle=0 DEG

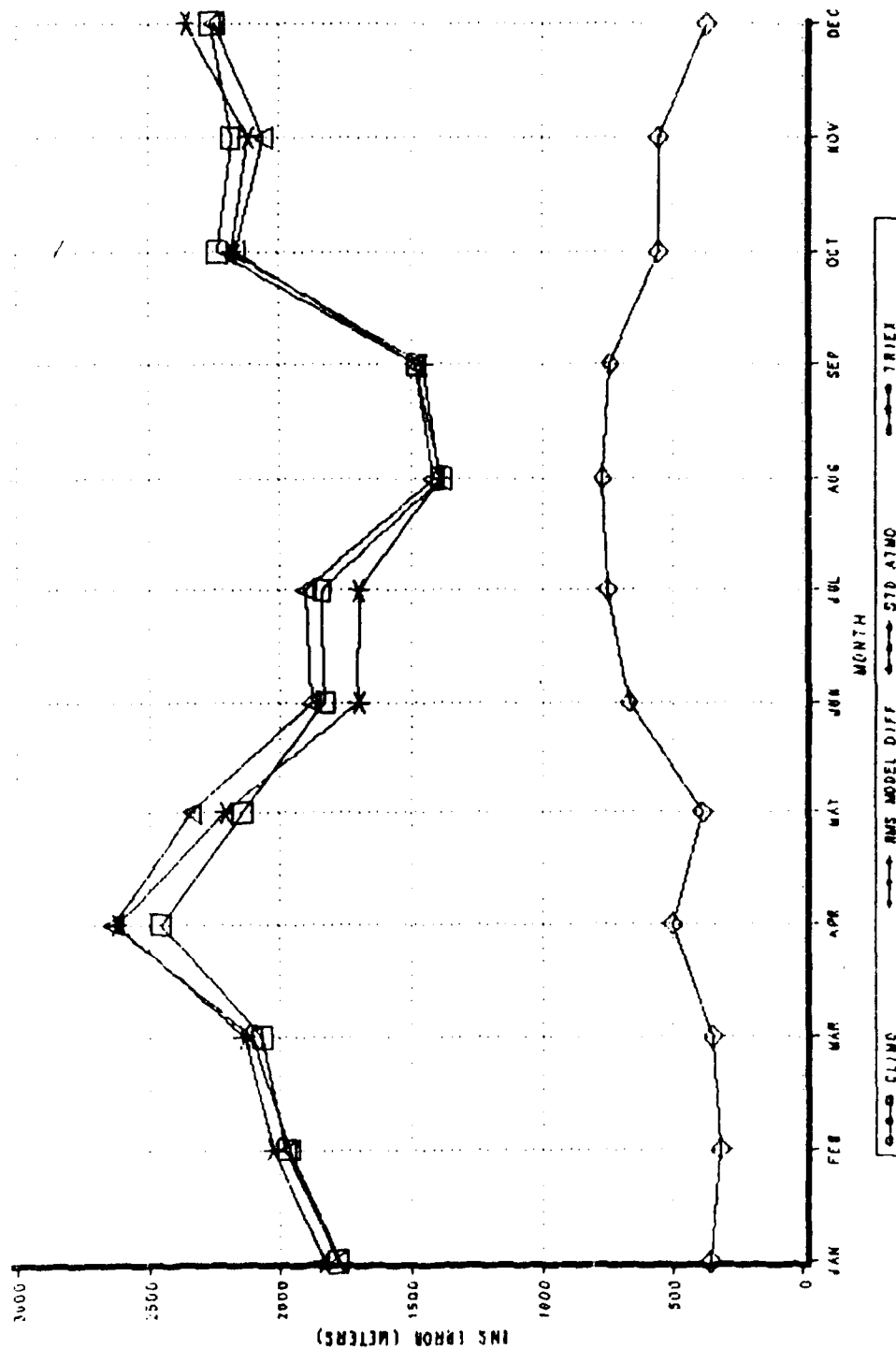


Figure 18-2

MONTHLY RMS HEIGHT ERRORS BY HOUR

Fort Fisher, NC (CHS RAOB Data)
Range=173 NM Angle=0 DEG

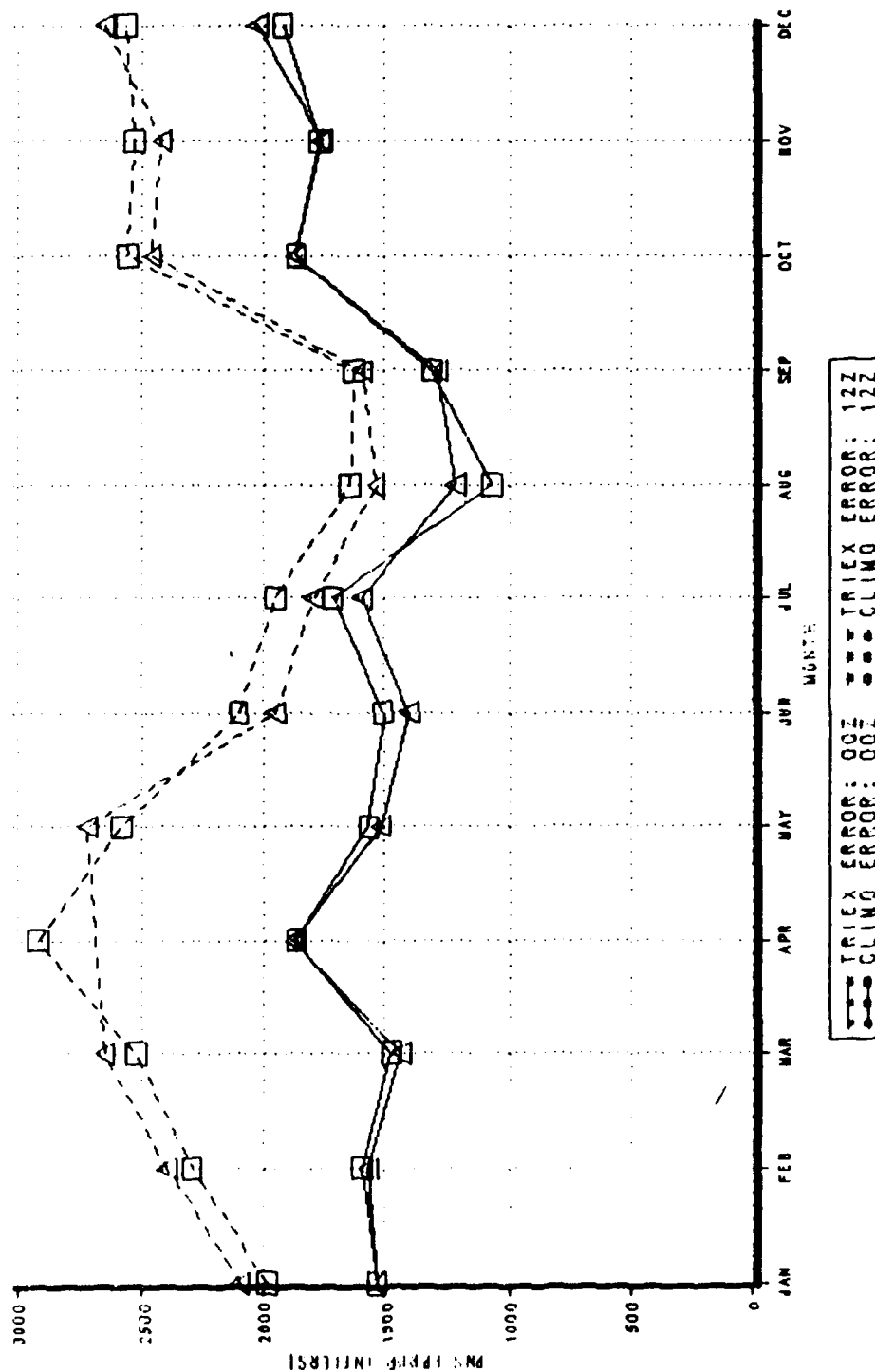


Figure 18-3

ERROR STATISTICS
Fort Fisher, NC (CHS RAOB Data)
Range=175 NM Angle=0 DEG

MODEL	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
TRIEXPONENTIAL	379.83	1972.78	-3184.8	6590.1
CLIMATOLOGY	593.25	1903.79	-4219.7	6360.2
STANDARD ATMOSPHERE	615.23	1931.25	-4029.3	5962.1

Figure 18-4

TRIEXPONENTIAL MODEL ERRORS
Fort Fisher, NC (CHS RAOB Data)
Range=175 NM Angle=0 DEG

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-3000	9	0.1	9	0.1
-2500	19	0.2	28	0.4
-2000	87	1.1	115	1.5
-1500	420	5.3	535	6.8
-1000	1268	16.1	1803	22.9
-500	1918	24.4	3721	47.3
0	1757	22.3	5478	69.7
500	834	10.6	6312	80.3
1000	366	4.7	6678	84.9
1500	177	2.3	6855	87.2
2000	114	1.4	6969	88.6
2500	53	0.7	7022	89.3
3000	42	0.5	7064	89.8
3500	16	0.2	7080	90.0
4000	19	0.2	7099	90.3
4500	26	0.3	7125	90.6
5000	107	1.4	7232	92.0
5500	153	1.9	7385	93.9
6000	314	4.0	7699	97.9
6500	164	2.1	7863	100.0

CLIMATOLOGY ERRORS

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-4000	3	0.0	3	0.0
-3500	3	0.0	6	0.1
-3000	5	0.1	11	0.1
-2500	11	0.1	22	0.3
-2000	42	0.5	64	0.8
-1500	132	1.7	196	2.5
-1000	731	9.3	927	11.8
-500	1945	24.7	2872	36.5
0	2001	25.4	4873	62.0
500	1118	14.2	5991	76.2
1000	551	7.0	6542	83.2
1500	259	3.3	6801	86.5
2000	134	1.7	6935	88.2
2500	70	0.9	7005	89.1
3000	38	0.5	7043	89.6
3500	36	0.5	7079	90.0
4000	15	0.2	7094	90.2
4500	12	0.2	7106	90.4
5000	27	0.3	7133	90.7
5500	253	3.2	7386	93.9
6000	417	5.3	7803	99.2
6500	60	0.8	7863	100.0

Figure 18-5

HEIGHT ERROR DISTRIBUTION Fort Fisher, NC (CHE RA08 Data) Range=175 NM Angle=0 DEG

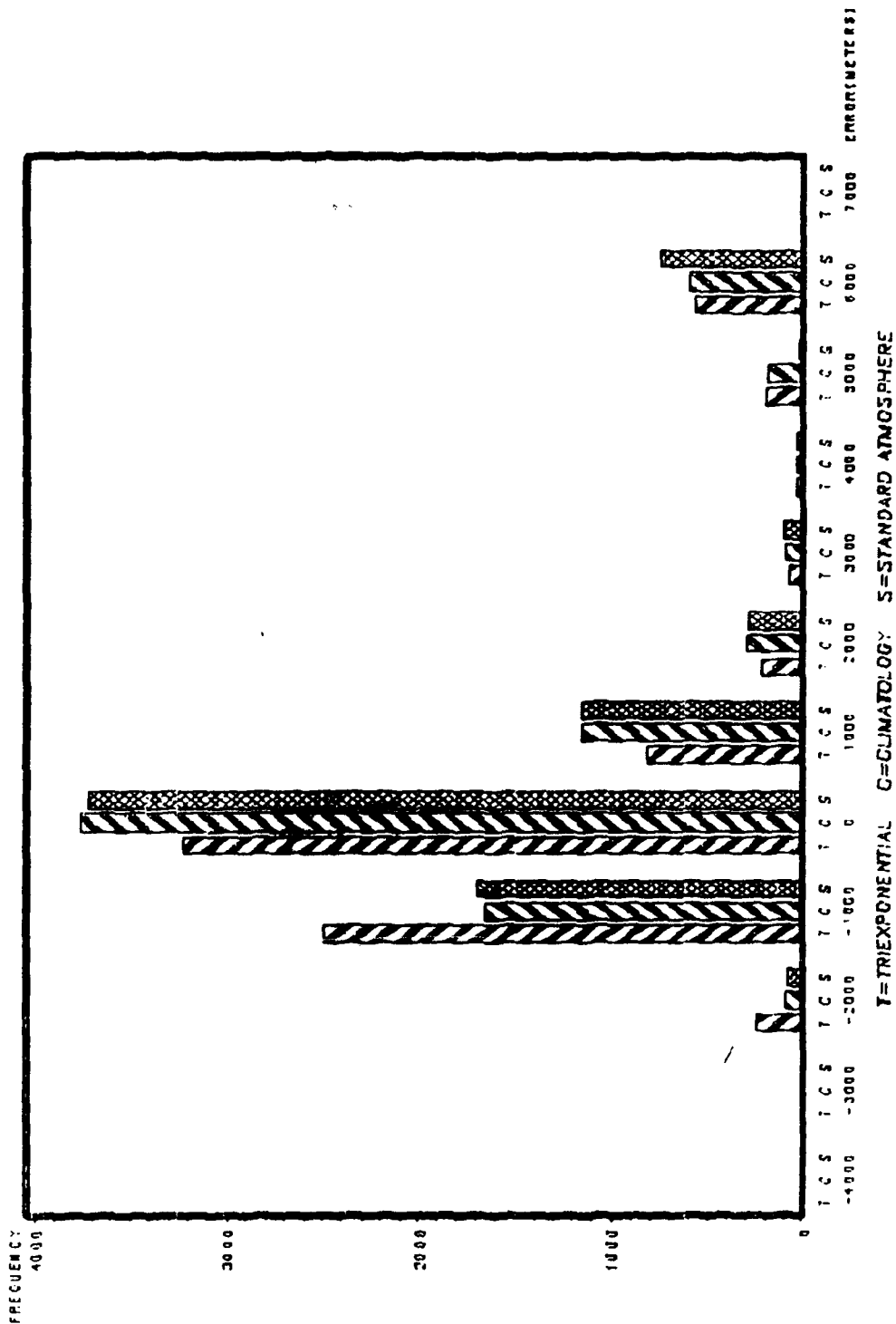


Figure 18-6

TRIEXPONENTIAL MODEL ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												Total
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
-3000	0.00	0.00	0.15	0.15	0.15	0.16	0.15	0.00	0.31	0.30	0.00	0.00	
-2500	0.00	0.00	0.15	0.00	0.00	0.16	0.60	0.30	0.31	0.45	0.78	0.15	
-2000	0.15	0.65	0.30	0.46	0.60	1.72	1.35	3.02	2.46	1.21	0.47	0.90	
-1500	1.33	1.15	1.19	2.16	2.54	7.99	14.41	16.29	7.68	3.62	3.45	2.09	
-1000	7.70	7.20	8.59	7.73	13.77	23.20	27.33	28.51	28.11	16.14	15.07	10.01	
-500	20.59	23.57	26.96	22.26	23.65	27.43	21.32	25.04	29.03	24.74	24.80	23.47	
0	39.70	36.50	28.15	21.64	19.91	14.11	14.86	11.92	13.98	20.97	21.82	24.81	
500	13.48	12.77	12.59	13.91	13.32	7.84	5.56	5.58	6.76	9.35	11.15	14.95	
1000	5.04	3.44	5.19	6.03	5.39	5.17	2.40	2.11	3.69	5.88	6.75	4.78	
1500	1.93	2.13	3.11	3.40	2.84	0.78	1.65	1.81	1.38	2.71	2.67	2.54	
2000	1.63	1.31	1.63	2.16	2.10	2.19	1.20	0.45	0.77	1.66	1.26	1.05	
2500	0.44	0.65	0.44	0.77	0.60	1.10	0.60	0.45	0.46	0.60	0.63	1.35	
3000	0.30	0.98	0.15	0.62	1.20	0.31	0.15	0.75	0.46	0.45	0.47	0.60	
3500	0.00	0.00	0.15	0.15	0.30	0.00	0.60	0.30	0.15	0.30	0.16	0.30	
4000	0.00	0.33	0.30	0.77	0.30	0.16	0.30	0.15	0.00	0.30	0.00	0.30	
4500	0.15	0.16	0.00	0.15	0.45	0.63	1.50	0.45	0.15	0.30	0.00	0.00	
5000	0.00	0.00	0.00	0.46	1.80	4.08	5.41	2.41	1.84	0.15	0.16	0.00	
5500	0.44	0.33	1.48	4.64	6.14	2.66	0.60	0.45	1.84	1.96	2.04	0.75	
6000	3.26	3.60	6.67	10.51	4.94	0.31	0.00	0.00	0.61	8.14	5.34	4.48	
6500	3.85	5.24	2.81	2.01	0.00	0.00	0.00	0.00	0.00	0.75	2.98	7.47	
Total	675	611	675	647	668	638	666	663	651	663	637	669	7863

Figure 18-7

CLIMATOLOGY ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
-4000	0.00	0.00	0.15	0.15	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	
-3500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.00	0.15	
-3000	0.00	0.00	0.00	0.00	0.30	0.00	0.00	0.00	0.15	0.15	0.16	0.00	
-2500	0.15	0.49	0.00	0.15	0.30	0.16	0.00	0.00	0.00	0.00	0.31	0.15	
-2000	0.59	0.33	1.19	1.55	0.45	0.16	0.45	0.15	0.31	0.60	0.31	0.30	
-1500	1.19	0.98	1.33	4.48	2.54	1.57	1.05	1.96	1.69	0.90	0.47	1.94	
-1000	9.78	8.35	9.78	18.86	10.93	5.96	8.86	10.41	7.37	3.62	4.08	13.30	
-500	36.30	30.93	27.41	23.96	26.20	20.53	23.27	23.98	21.97	17.35	16.17	28.40	
0	27.56	29.79	28.00	16.07	20.36	25.24	24.17	28.05	27.19	28.21	26.22	24.66	
500	9.93	10.64	12.74	7.42	10.93	19.12	15.92	14.93	19.66	19.16	21.04	9.42	
1000	3.41	4.75	4.00	4.17	6.59	9.87	9.31	8.45	8.91	9.20	11.46	4.19	
1500	1.78	2.13	1.93	2.01	4.19	4.23	4.20	3.47	4.30	4.52	5.02	1.79	
2000	1.33	0.49	1.48	1.55	1.05	2.35	1.50	2.41	2.15	2.26	2.67	1.20	
2500	0.30	0.65	0.44	0.77	1.65	1.10	1.05	1.06	0.77	0.90	1.10	0.90	
3000	0.00	0.65	0.00	0.46	0.45	1.10	1.05	0.30	0.46	0.75	0.16	0.45	
3500	0.00	0.49	0.59	0.46	0.60	3.47	0.75	0.75	0.61	0.15	0.16	0.45	
4000	0.15	0.00	0.00	0.46	0.45	0.00	0.30	0.45	0.00	0.30	0.16	0.00	
4500	0.00	0.16	0.00	0.15	0.30	0.31	0.45	0.15	0.00	0.30	0.00	3.00	
5000	0.00	0.00	0.00	1.24	1.80	0.31	0.15	0.15	0.00	0.30	0.16	0.00	
5500	0.00	0.00	2.72	16.07	8.53	5.33	4.65	0.60	1.23	0.00	0.00	0.00	
6000	7.56	6.38	8.74	0.00	2.40	2.04	2.85	2.71	3.23	11.01	3.51	12.71	
6500	0.00	2.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.75	0.00	
tal	675	611	675	647	668	638	666	663	651	663	637	669	7863

Figure 18-8

HEIGHT DISIRIBUTION

Fort Fisher, NC (CHS RAOB Data) Range = 175 NM Angle = 0 DEG

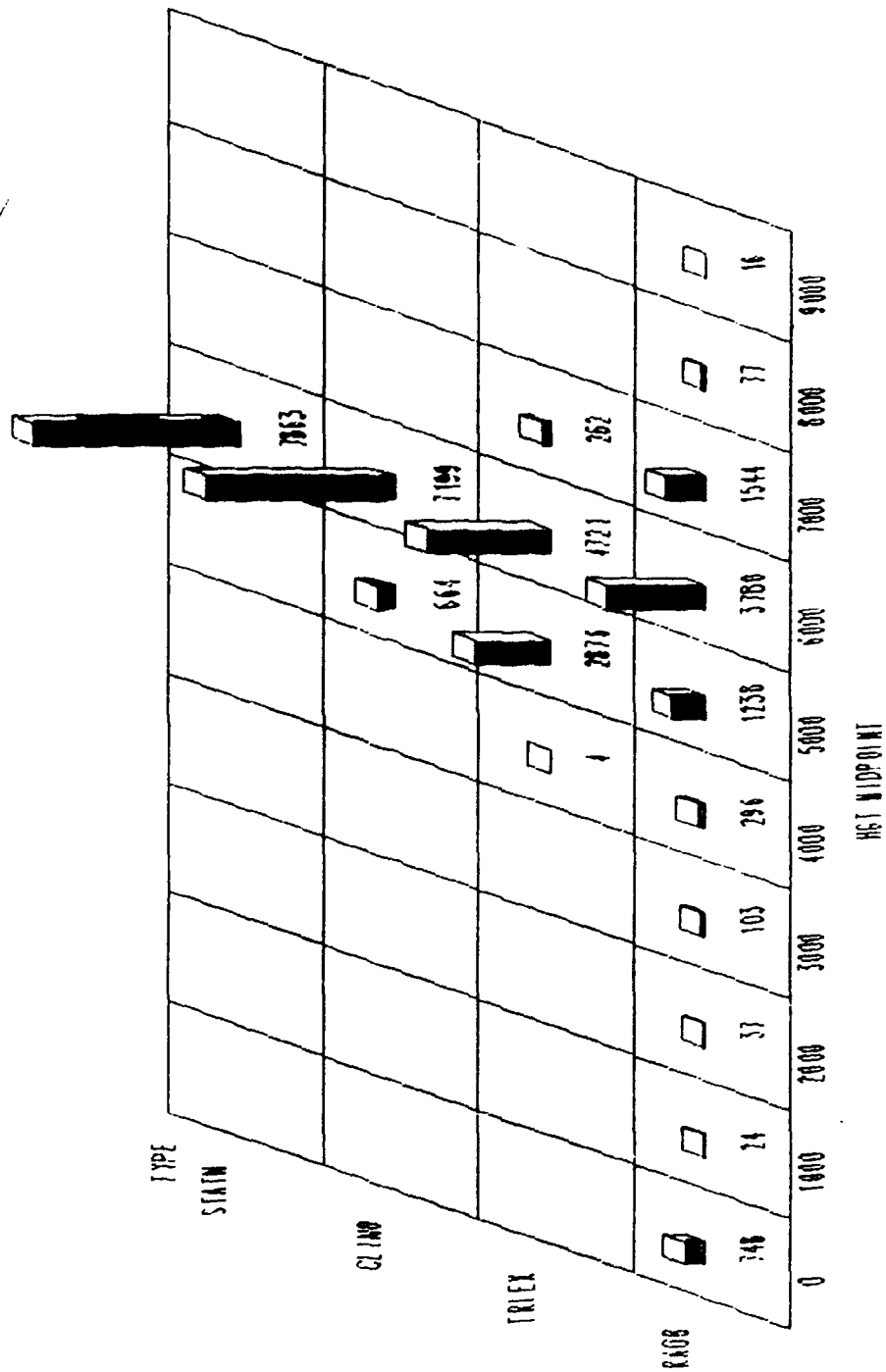


Figure 18-9

RMS ERRORS (meters) FOR
 Bucks Harbor, ME (PWM RAOB Data)
 Range=175 NM Angle=0 DEG

ENTIRE POR

TRIEXPONENTIAL	CLIMATOLOGY	STANDARD ATMOSPHERE
1067	1078	1130

RMS HEIGHT ERRORS FROM THE TRIEXPONENTIAL MODEL
 BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	662	442	826
FEB	723	793	646
MAR	815	722	899
APR	1056	810	1254
MAY	1380	1171	1562
JUN	1293	990	1537
JUL	1549	1272	1782
AUG	1287	1007	1516
SEP	1179	1229	1127
OCT	1041	1025	1057
NOV	752	896	571
DEC	427	465	385

RMS HEIGHT ERRORS FROM CLIMATOLOGY
 BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	659	435	825
FEB	726	804	641
MAR	822	733	903
APR	1053	810	1249
MAY	1365	1170	1536
JUN	1310	1017	1548
JUL	1561	1311	1776
AUG	1338	1027	1588
SEP	1211	1279	1140
OCT	1054	1047	1061
NOV	763	925	554
DEC	412	440	381

Figure 19-1

MONTHLY RMS HEIGHT ERRORS
 Bucks Harbor, ME (PWM RADAR Data) Range=175 NM Angle=0 DEG

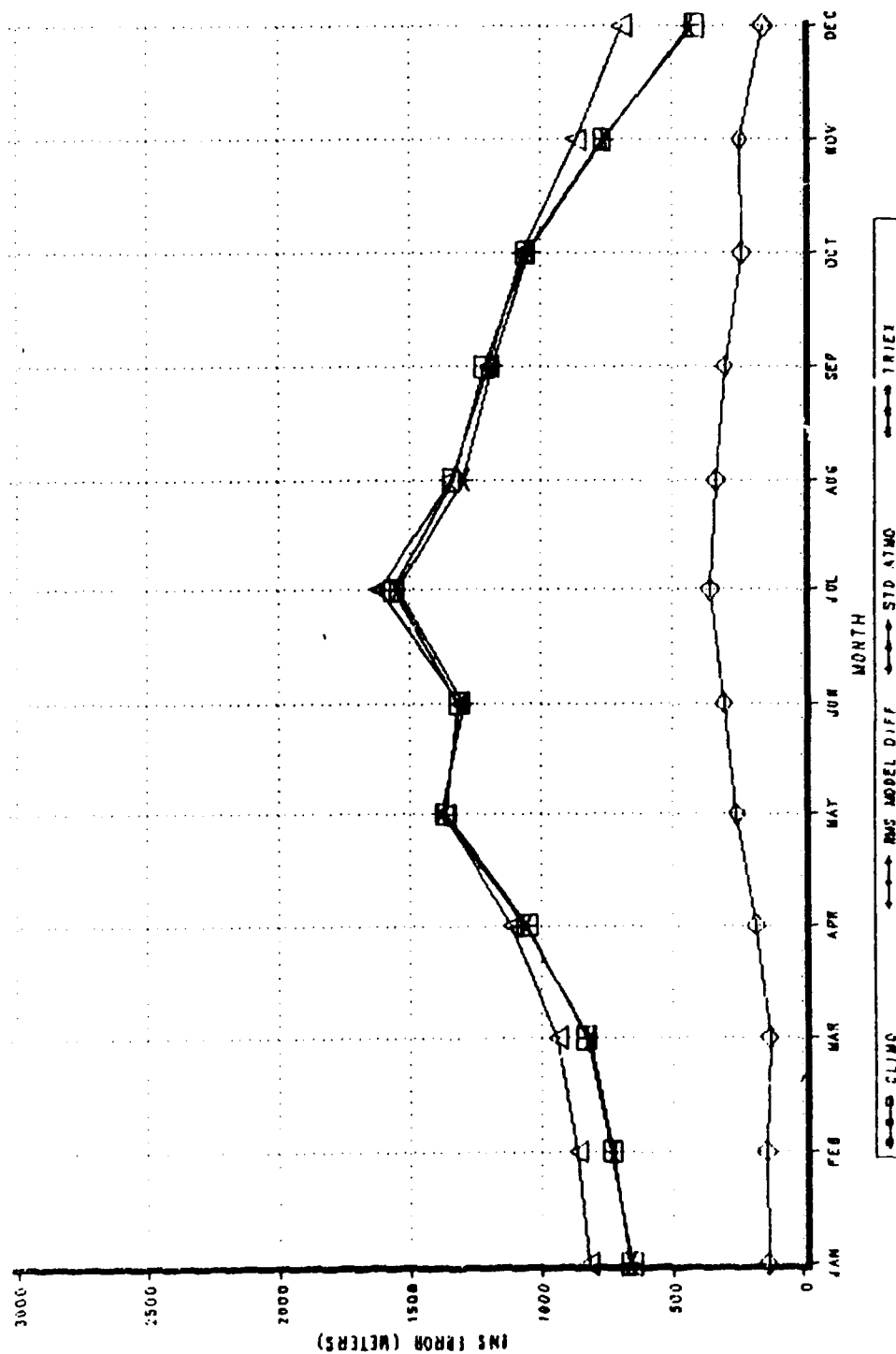


Figure 19-2

MONTHLY RMS HEIGHT ERRORS BY HOUR

Bucks Harbor, ME (PWN RAD0 Dg10)

Range=173 NM Angle=0 DEG

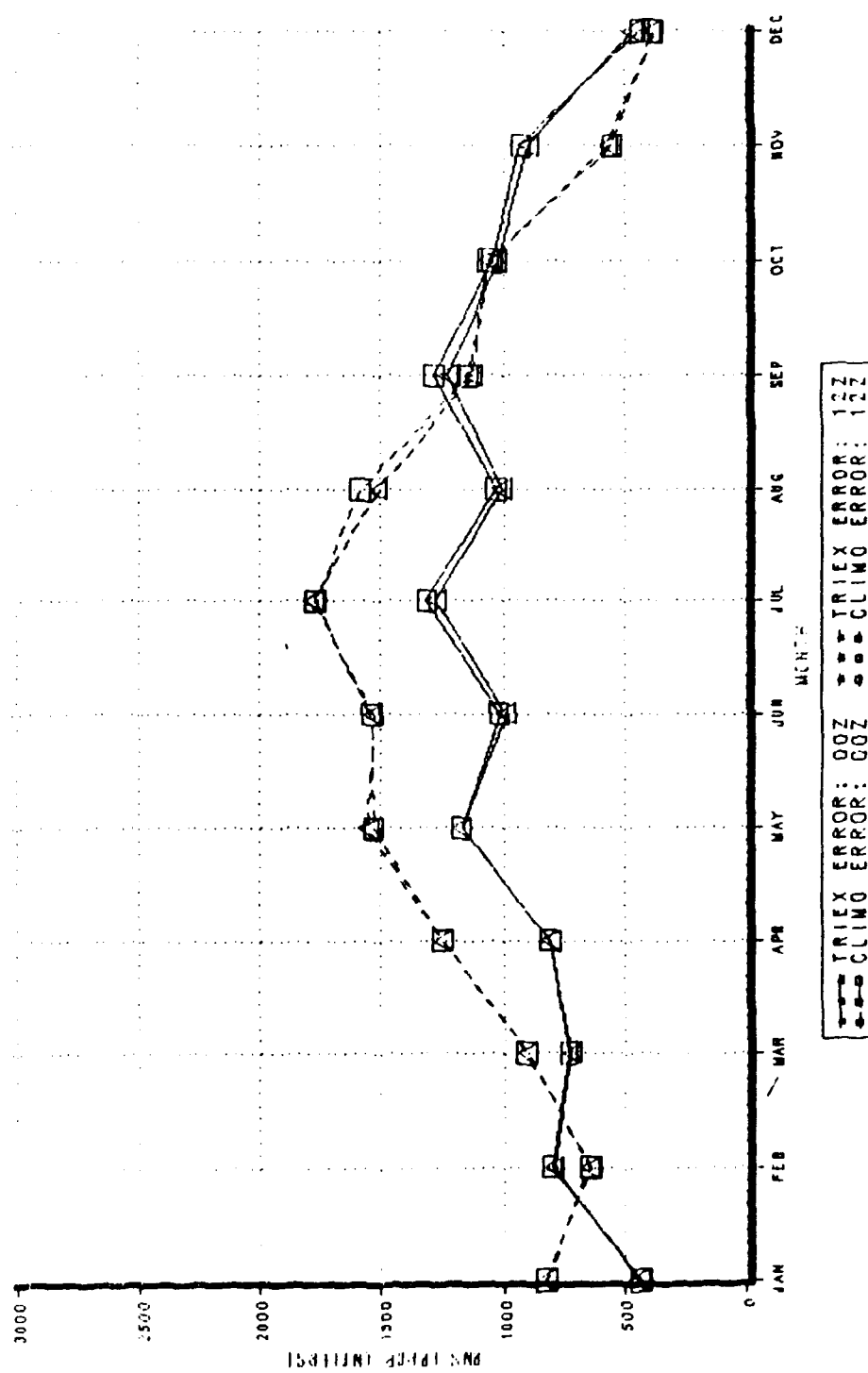


Figure 19-3

ERROR STATISTICS
Bucks Harbor, ME (PWM RAOB Data)
Range=175 NM Angle=0 DEG

MODEL	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
TRIEXPONENTIAL	42.63	1065.83	-2055.6	6648.0
CLIMATOLOGY	122.81	1070.93	-2964.9	6619.7
STANDARD ATMOSPHERE	-173.35	1116.45	-3088.0	6019.2

Figure 19-4

TRIEXPONENTIAL MODEL ERRORS
Bucks Harbor, ME (PWM RAOB Data)
Range=175 NM Angle=0 DEG

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-2000	4	0.1	4	0.1
-1500	51	0.6	55	0.7
-1000	477	6.0	532	6.7
-500	2441	30.9	2973	37.6
0	3469	43.9	6442	81.5
500	818	10.3	7260	91.8
1000	249	3.1	7509	95.0
1500	116	1.5	7625	96.4
2000	57	0.7	7682	97.2
2500	15	0.2	7697	97.3
3000	10	0.1	7707	97.5
3500	5	0.1	7712	97.5
4000	4	0.1	7716	97.6
4500	5	0.1	7721	97.6
5000	6	0.1	7727	97.7
5500	50	0.6	7777	98.4
6000	83	1.0	7860	99.4
6500	47	0.6	7907	100.0

CLIMATOLOGY ERRORS

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-3000	2	0.0	2	0.0
-2000	3	0.0	5	0.1
-1500	19	0.2	24	0.3
-1000	248	3.1	272	3.4
-500	2248	28.4	2520	31.9
0	3660	46.3	6180	78.2
500	967	12.2	7147	90.4
1000	329	4.2	7476	94.5
1500	136	1.7	7612	96.3
2000	55	0.7	7667	97.0
2500	28	0.4	7695	97.3
3000	9	0.1	7704	97.4
3500	7	0.1	7711	97.5
4000	4	0.1	7715	97.6
4500	6	0.1	7721	97.6
5000	7	0.1	7728	97.7
5500	29	0.4	7757	98.1
6000	89	1.1	7846	99.2
6500	61	0.8	7907	100.0

Figure 19-5

HEIGHT ERROR DISTRIBUTION Bucks Harbor, ME (PWM RAOB Data) Range=175 NM Angle=0 DEG

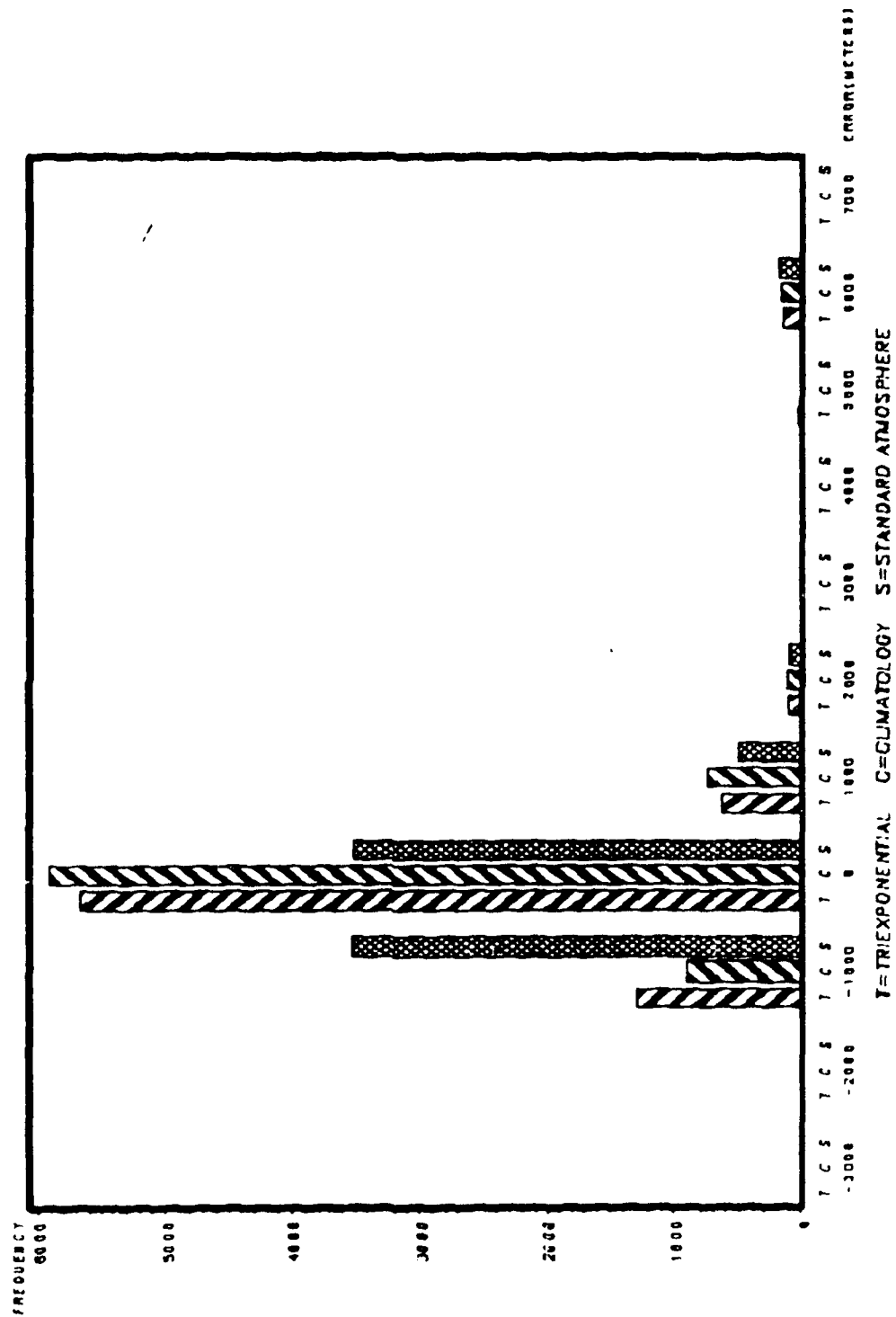


Figure 19-6

TRIEXPONENTIAL MODEL ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												Total
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
-2000	0.00	0.00	0.00	0.00	0.15	0.00	0.30	0.00	0.15	0.00	0.00	0.00	
-1500	0.00	0.00	0.00	0.61	0.15	1.69	1.33	1.33	1.23	0.91	0.31	0.15	
-1000	0.89	0.82	2.23	3.67	6.71	10.31	12.59	13.48	9.23	5.32	4.63	2.08	
-500	15.92	19.74	26.41	34.56	38.00	37.23	34.81	37.63	34.31	31.91	34.26	25.15	
0	70.68	65.63	56.82	45.26	31.00	28.77	24.44	23.70	31.23	39.82	47.38	63.10	
500	8.93	9.87	9.35	8.26	10.88	10.31	10.52	12.30	12.46	14.44	8.80	8.04	
1000	2.08	2.30	2.37	3.06	4.62	3.23	5.19	3.56	4.77	3.34	2.47	0.74	
1500	0.45	0.33	0.74	1.22	2.38	2.46	2.96	2.52	2.15	1.22	0.62	0.45	
2000	0.15	0.33	0.59	0.76	1.49	1.08	0.74	1.19	1.23	0.61	0.31	0.15	
2500	0.00	0.00	0.15	0.15	0.00	1.08	0.44	0.30	0.00	0.15	0.00	0.00	
3000	0.00	0.00	0.00	0.00	0.15	0.15	0.59	0.15	0.15	0.00	0.31	0.00	
3500	0.00	0.00	0.15	0.15	0.30	0.15	0.00	0.00	0.00	0.00	0.00	0.00	
4000	0.00	0.00	0.00	0.15	0.15	0.00	0.30	0.00	0.00	0.00	0.00	0.00	
4500	0.00	0.00	0.00	0.00	0.15	0.15	0.15	0.00	0.15	0.15	0.00	0.00	
5000	0.15	0.00	0.00	0.00	0.15	0.15	0.00	0.00	0.31	0.15	0.00	0.00	
5500	0.00	0.00	0.00	0.00	0.15	0.62	2.96	2.81	0.77	0.00	0.15	0.00	
6000	0.00	0.00	0.00	0.92	2.68	2.46	2.67	1.04	1.85	0.76	0.15	0.00	
6500	0.74	0.99	1.19	1.22	0.89	0.15	0.00	0.00	0.00	1.22	0.62	0.15	
Total	672	608	674	654	671	650	675	675	650	658	648	672	7907

Figure 19-7

CLIMATOLOGY ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH													
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total	
-3000	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.00	0.00	0.00	0.00	0.00		
-2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.46	0.00	0.00		
-1500	0.00	0.00	0.00	0.31	0.30	0.77	0.44	0.30	0.46	0.30	0.00	0.00		
-1000	0.30	0.49	1.48	1.53	4.77	4.46	6.81	6.81	4.46	2.74	2.01	1.49		
-500	18.01	17.60	33.83	34.25	39.79	32.15	29.93	30.22	32.15	29.33	25.15	18.01		
0	69.05	68.09	50.74	46.79	29.51	32.92	31.70	33.19	33.23	41.79	53.70	66.22		
500	9.23	9.70	8.46	8.87	12.22	14.77	12.74	13.93	16.15	15.35	12.96	12.35		
1000	1.93	2.47	2.52	3.36	5.51	4.92	6.22	6.52	6.31	5.32	3.70	1.04		
1500	0.45	0.49	0.49	1.53	1.94	3.54	3.41	2.96	2.31	1.52	0.93	0.60		
2000	0.15	0.16	0.45	0.92	1.04	1.23	1.04	1.33	1.38	0.46	0.00	0.15		
2500	0.00	0.00	0.30	0.00	0.15	1.23	1.04	0.44	0.31	0.46	0.31	0.00		
3000	0.00	0.00	0.00	0.00	0.30	0.31	0.30	0.15	0.15	0.00	0.15	0.00		
3500	0.00	0.00	0.00	0.15	0.30	0.15	0.00	0.30	0.00	0.00	0.15	0.00		
4000	0.00	0.00	0.15	0.15	0.00	0.00	0.30	0.00	0.00	0.00	0.00	0.00		
4500	0.00	0.00	0.00	0.00	0.30	0.15	0.15	0.00	0.15	0.15	0.00	0.00		
5000	0.15	0.00	0.00	0.00	0.30	0.15	0.15	0.00	0.15	0.15	0.00	0.00		
5500	0.00	0.00	0.00	0.00	0.00	0.15	3.70	0.30	0.00	0.00	0.15	0.00		
6000	0.00	0.00	0.00	0.31	2.38	2.46	1.78	3.56	2.77	0.15	0.00	0.00		
6500	0.74	0.99	1.19	1.83	1.19	0.62	0.00	0.00	0.00	1.82	0.77	0.15		
Total	672	608	674	654	671	650	675	675	650	658	648	672	7907	

Figure 19-8

HEIGHT DISTRIBUTION

Bucks Harbor, ME (PWM RAOB Data) Range = 175 NM Angle = 0 DEG

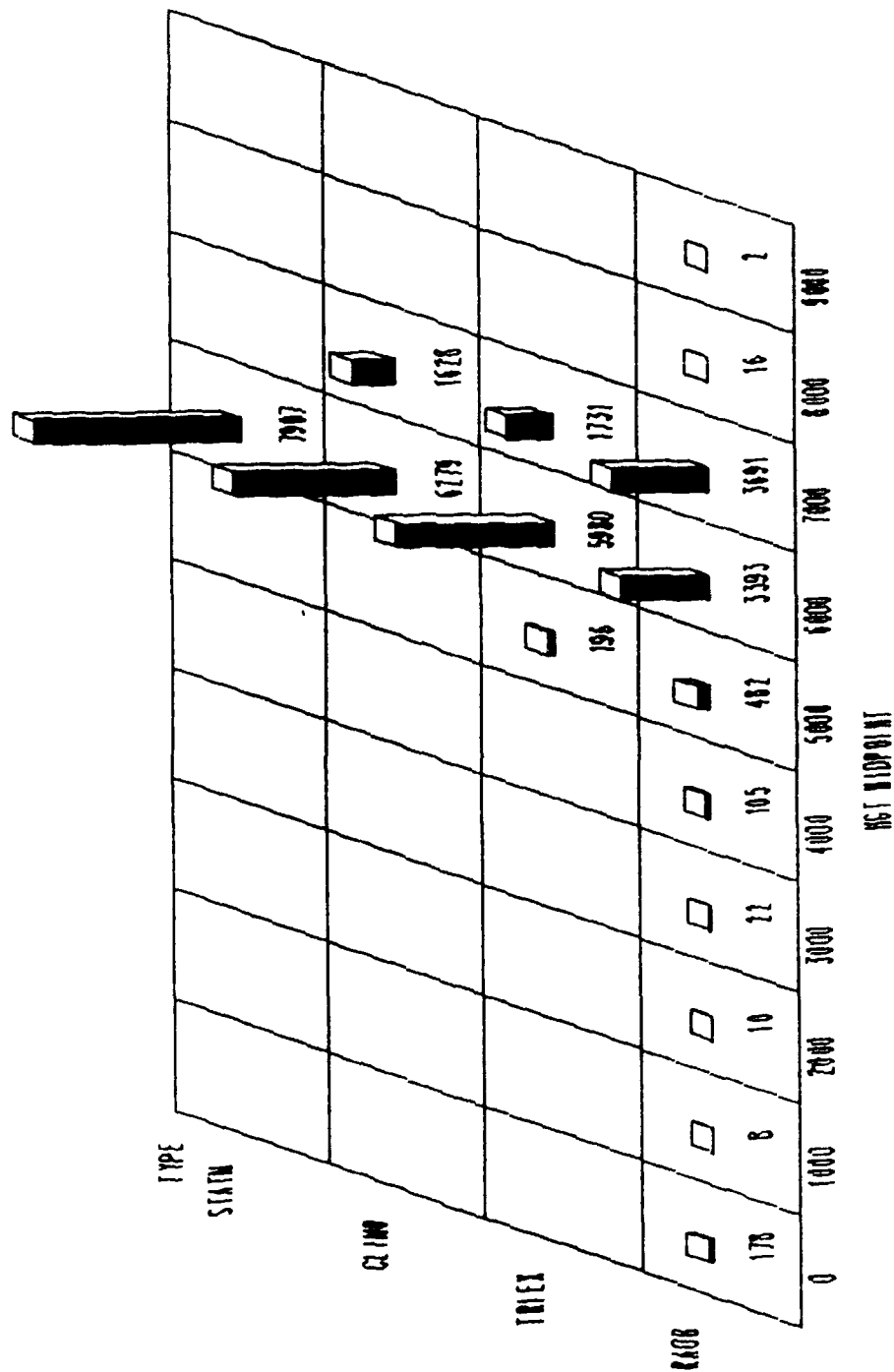


Figure 19-9

RMS ERRORS (meters) FOR
El Paso, TX (ELP RAOB Data)
Range=175 NM Angle=0 DEG

ENTIRE POR

TRIEXPONENTIAL	CLIMATOLOGY	STANDARD ATMOSPHERE
1914	1863	1907

RMS HEIGHT ERRORS FROM THE TRIEXPONENTIAL MODEL
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	1440	713	1910
FEB	1930	751	2626
MAR	2067	1008	2753
APR	2009	1001	2657
MAY	1961	1235	2481
JUN	1884	1219	2363
JUL	2059	1618	2421
AUG	1814	1367	2166
SEP	2005	1242	2554
OCT	2094	1533	2536
NOV	1961	1141	2528
DEC	1649	1082	2066

RMS HEIGHT ERRORS FROM CLIMATOLOGY
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	1330	743	1730
FEB	1789	838	2388
MAR	1950	1116	2530
APR	1938	1088	2515
MAY	1990	1360	2462
JUN	1899	1358	2312
JUL	2093	1824	2330
AUG	1867	1525	2152
SEP	2004	1337	2504
OCT	1994	1625	2307
NOV	1837	1192	2309
DEC	1540	1107	1875

Figure 20-1

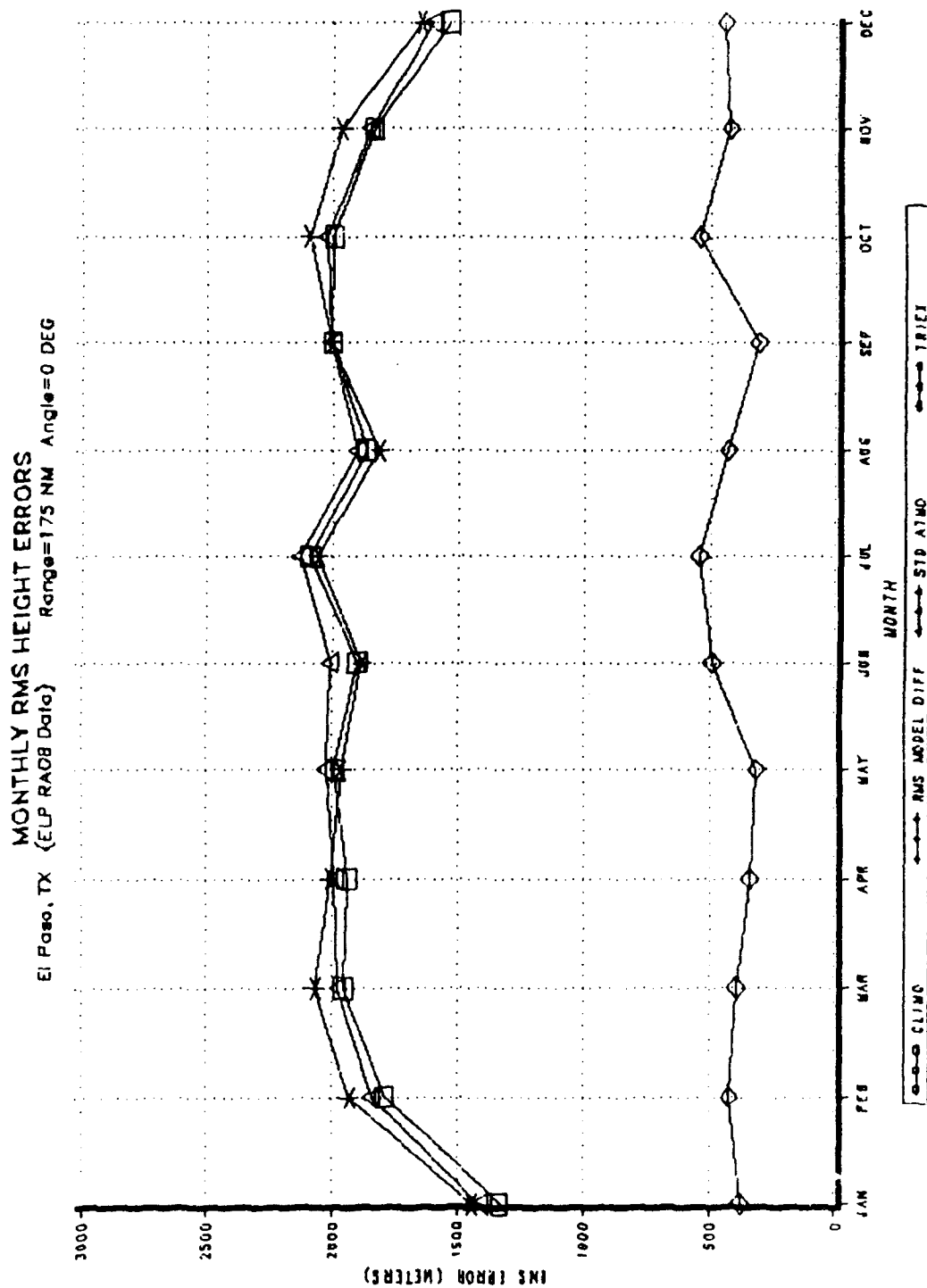


Figure 20-2

MONTHLY RMS HEIGHT ERRORS BY HOUR

El Paso, TX (ELP RA08 Data)
Range=175 NM Angle=0 DEG

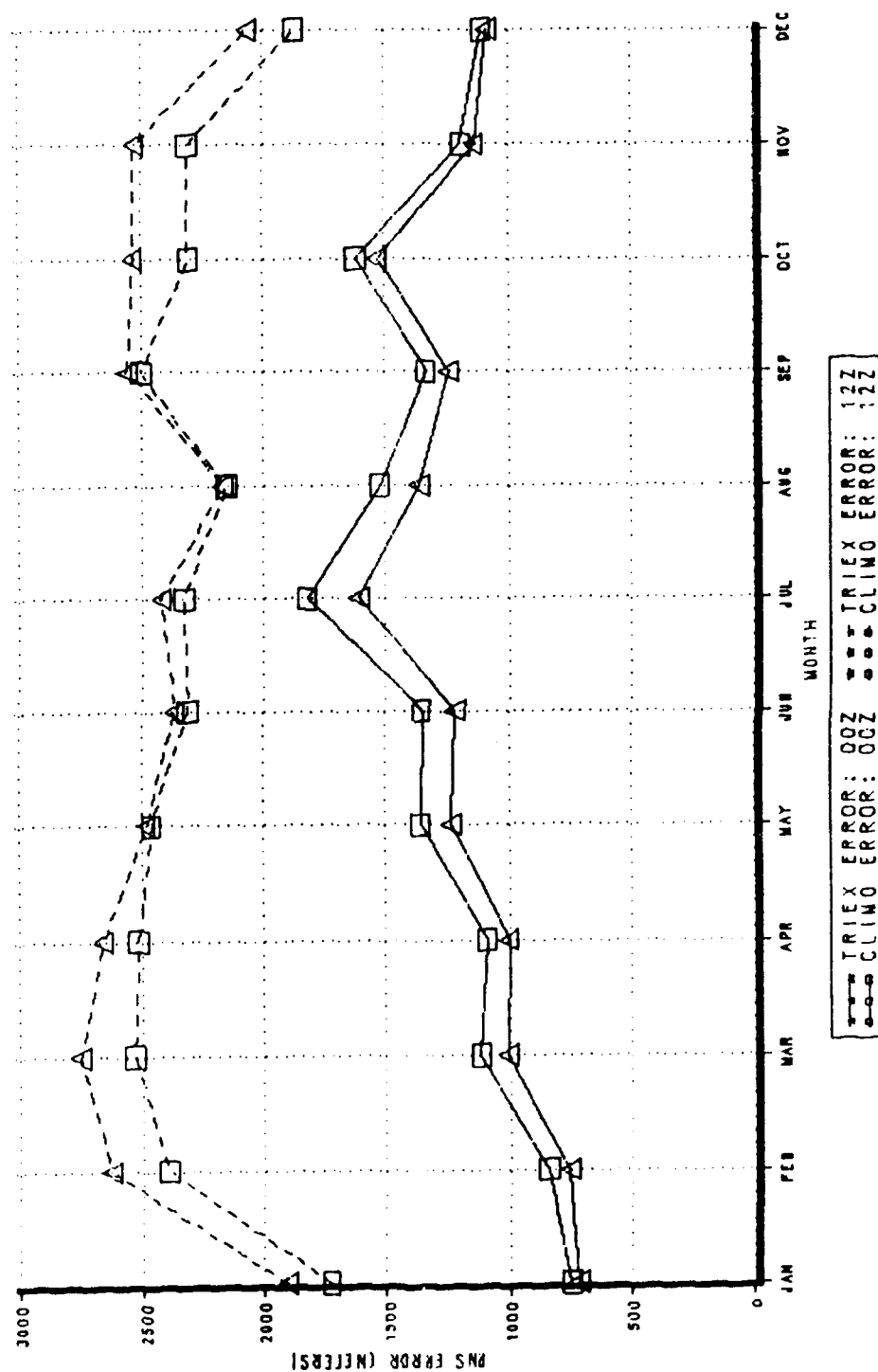


Figure 20-3

ERROR STATISTICS
 El Paso, TX (ELP RAOB Data)
 Range=175 NM Angle=0 DEG

MODEL	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
TRIEXPONENTIAL	590.92	1820.89	-2588.0	7096.6
CLIMATOLOGY	482.38	1800.04	-2702.8	7310.7
STANDARD ATMOSPHERE	-150.01	1901.48	-3667.0	5998.8

Figure 20-4

TRIEXPONENTIAL MODEL ERRORS
El Paso, TX (ELP RAOB Data)
Range=175 NM Angle=0 DEG

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-2500	1	0.0	1	0.0
-2000	3	0.0	4	0.1
-1500	34	0.4	38	0.5
-1000	349	4.5	387	5.0
-500	1665	21.4	2052	26.4
0	2982	38.4	5034	64.8
500	1189	15.3	6223	80.1
1000	501	6.5	6724	86.6
1500	226	2.9	6950	89.5
2000	99	1.3	7049	90.8
2500	52	0.7	7101	91.4
3000	28	0.4	7129	91.8
3500	23	0.3	7152	92.1
4000	20	0.3	7172	92.4
4500	13	0.2	7185	92.5
5000	13	0.2	7198	92.7
5500	16	0.2	7214	92.9
6000	109	1.4	7323	94.3
6500	250	3.2	7573	97.5
7000	192	2.5	7765	100.0

CLIMATOLOGY ERRORS

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-2500	4	0.1	4	0.1
-2000	16	0.2	20	0.3
-1500	76	1.0	96	1.2
-1000	565	7.3	661	8.5
-500	1939	25.0	2600	33.5
0	2618	33.7	5218	67.2
500	1195	15.4	6413	82.6
1000	388	5.0	6801	87.6
1500	192	2.5	6993	90.1
2000	76	1.0	7069	91.0
2500	50	0.6	7119	91.7
3000	22	0.3	7141	92.0
3500	18	0.2	7159	92.2
4000	19	0.2	7178	92.4
4500	11	0.1	7189	92.6
5000	8	0.1	7197	92.7
5500	8	0.1	7205	92.8
6000	243	3.1	7448	95.9
6500	216	2.8	7664	98.7
7000	93	1.2	7757	99.9
7500	8	0.1	7765	100.0

Figure 20-5

HEIGHT ERROR DISTRIBUTION El Paso, TX (ELP RA08 Data) Range=175 NM Angle=0 DEG

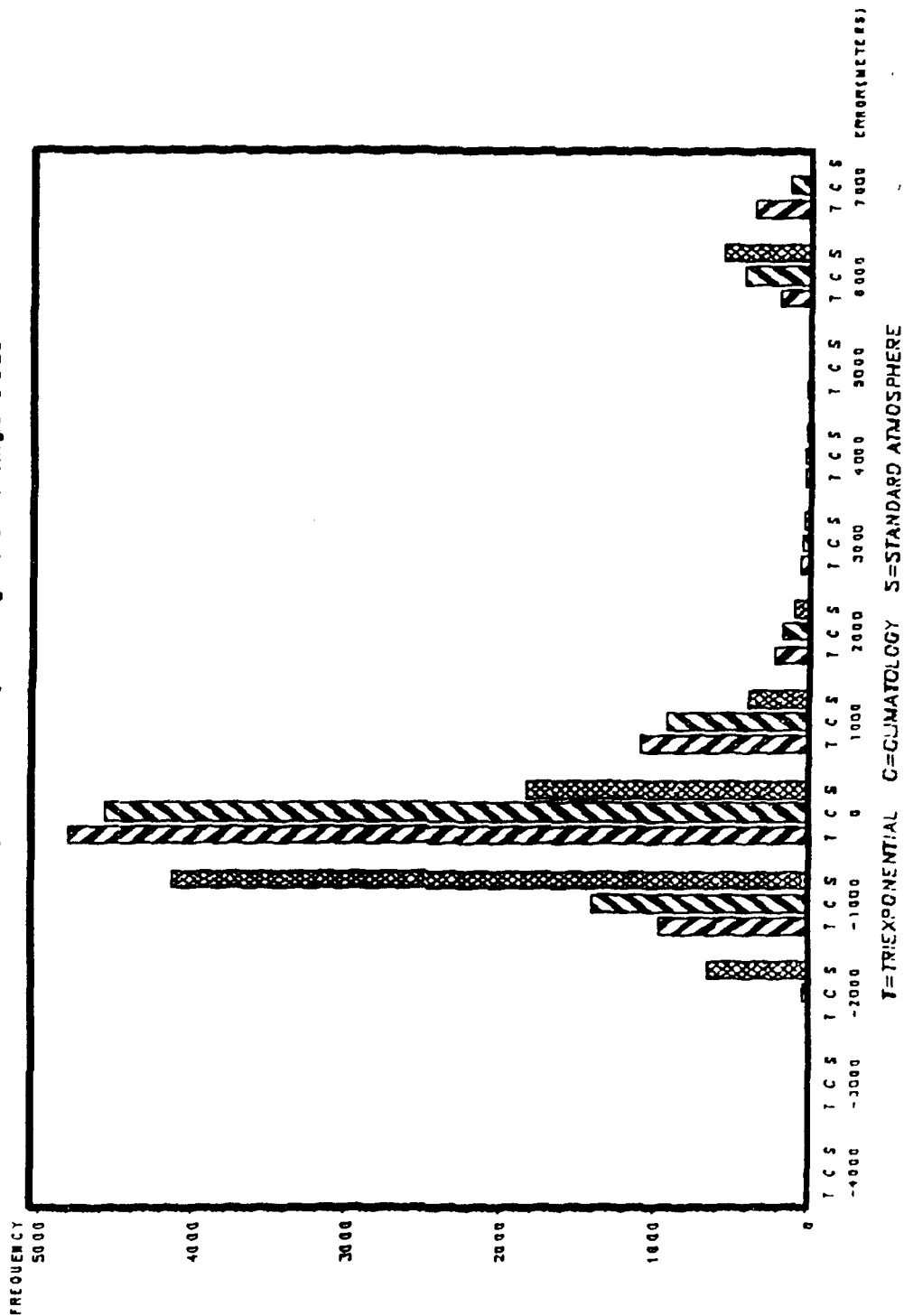


Figure 20-6

TRIEXPONENTIAL MODEL ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												Total
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
-2500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	
-2000	0.00	0.00	0.00	0.00	0.00	0.00	0.31	0.16	0.00	0.00	0.00	0.00	
-1500	0.00	0.00	0.30	0.00	0.30	0.64	1.39	1.71	0.77	0.15	0.00	0.00	
-1000	0.60	1.00	1.19	2.09	6.02	12.76	10.32	10.26	5.26	2.10	0.78	1.81	
-500	6.59	10.78	14.31	23.27	25.15	30.14	31.28	34.99	32.46	24.47	12.46	11.78	
0	53.29	50.58	42.18	38.68	39.46	27.27	24.81	23.17	29.06	38.14	45.95	47.89	
500	20.06	17.08	19.23	15.41	12.20	12.12	11.86	11.66	12.52	13.36	17.91	20.09	
1000	8.83	6.97	7.45	6.26	4.67	4.47	4.62	5.13	5.56	6.31	8.88	8.16	
1500	3.59	2.99	4.02	3.05	2.26	3.19	2.16	2.02	2.47	3.15	2.65	3.32	
2000	2.10	1.66	1.19	0.96	1.36	0.96	1.39	0.93	1.70	1.05	1.25	0.76	
2500	0.45	0.33	0.75	0.96	0.30	0.64	0.46	0.93	0.62	0.90	1.25	0.45	
3000	0.30	0.17	0.45	0.32	0.00	0.32	0.77	0.47	0.31	0.60	0.47	0.15	
3500	0.30	0.83	0.15	0.32	0.15	0.00	0.46	0.31	0.00	0.15	0.78	0.15	
4000	0.00	0.33	0.30	0.64	0.15	0.00	0.46	0.31	0.31	0.30	0.16	0.15	
4500	0.15	0.17	0.15	0.00	0.15	0.00	0.31	0.47	0.31	0.15	0.00	0.15	
5000	0.30	0.17	0.15	0.16	0.15	0.16	0.15	0.62	0.00	0.00	0.00	0.15	
5500	0.00	0.17	0.15	0.48	0.00	0.00	0.77	0.78	0.00	0.15	0.00	0.00	
6000	0.00	0.00	0.15	0.48	0.90	2.23	4.93	4.04	3.09	0.90	0.16	0.00	
6500	1.20	2.16	2.53	2.41	2.86	3.19	3.24	1.71	5.41	7.36	4.52	1.96	
7000	2.25	4.64	5.37	4.49	3.92	1.91	0.31	0.16	0.15	0.75	2.80	3.02	
Total	668	603	671	623	664	627	649	643	647	666	642	662	7765

Figure 20-7

CLIMATOLOGY ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
-2500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.31	0.15	0.15	0.00	0.00	
-2000	0.30	0.00	0.00	0.00	0.15	0.48	0.62	0.47	0.31	0.15	0.00	0.00	
-1500	0.15	0.00	0.89	0.32	0.75	1.75	2.93	1.56	0.62	2.10	0.16	0.45	
-1000	1.80	4.48	4.02	5.46	4.67	11.32	11.40	8.40	6.03	15.32	5.76	8.61	
-500	21.26	22.39	24.89	29.86	26.51	25.52	23.88	23.33	27.20	26.28	24.92	23.72	
0	49.40	39.30	36.07	31.30	32.23	26.00	24.50	27.53	28.59	27.63	37.38	44.11	
500	14.37	18.24	17.29	14.93	17.32	16.11	14.18	17.88	15.61	11.41	15.73	11.93	
1000	5.24	4.15	4.32	5.62	6.02	.90	5.86	5.60	7.42	3.30	3.27	3.32	
1500	2.10	2.32	2.24	1.61	3.01	3.03	3.08	3.58	2.32	2.40	2.49	1.51	
2000	0.60	0.50	0.75	1.28	0.60	1.44	1.69	1.56	1.24	0.60	1.25	0.30	
2500	0.45	0.33	0.60	0.64	0.45	0.64	0.92	0.93	0.93	0.60	0.93	0.30	
3000	0.45	0.50	0.15	0.32	0.00	0.00	0.46	0.62	0.31	0.15	0.31	0.15	
3500	0.15	0.50	0.30	0.16	0.15	0.32	0.31	0.16	0.00	0.15	0.31	0.30	
4000	0.00	0.17	0.15	0.48	0.30	0.00	0.46	0.31	0.31	0.60	0.00	0.15	
4500	0.15	0.17	0.00	0.00	0.00	0.16	0.31	0.62	0.15	0.00	0.00	0.15	
5000	0.15	0.00	0.15	0.32	0.00	0.00	0.31	0.31	0.00	0.00	0.00	0.00	
5500	0.00	0.17	0.00	0.48	0.00	0.00	0.15	0.16	0.00	0.30	0.00	0.00	
6000	0.00	0.00	0.00	0.00	0.15	2.07	6.32	4.98	7.26	6.46	6.23	3.93	
6500	3.14	6.30	7.15	6.42	6.17	3.99	0.15	0.16	0.00	0.15	0.00	0.00	
7000	0.30	0.50	1.04	0.80	1.51	0.00	2.47	1.56	1.55	2.25	1.25	1.06	
7500	0.00	0.00	0.00	0.00	0.00	1.28	0.00	0.00	0.00	0.00	0.00	0.00	
Total	668	603	671	623	664	627	649	643	647	666	642	662	7765

Figure 20-8

HEIGHT DISTRIBUTION

El Paso, TX (ELP RAOB Data) Range = 175 NM Angle = 0 DEG

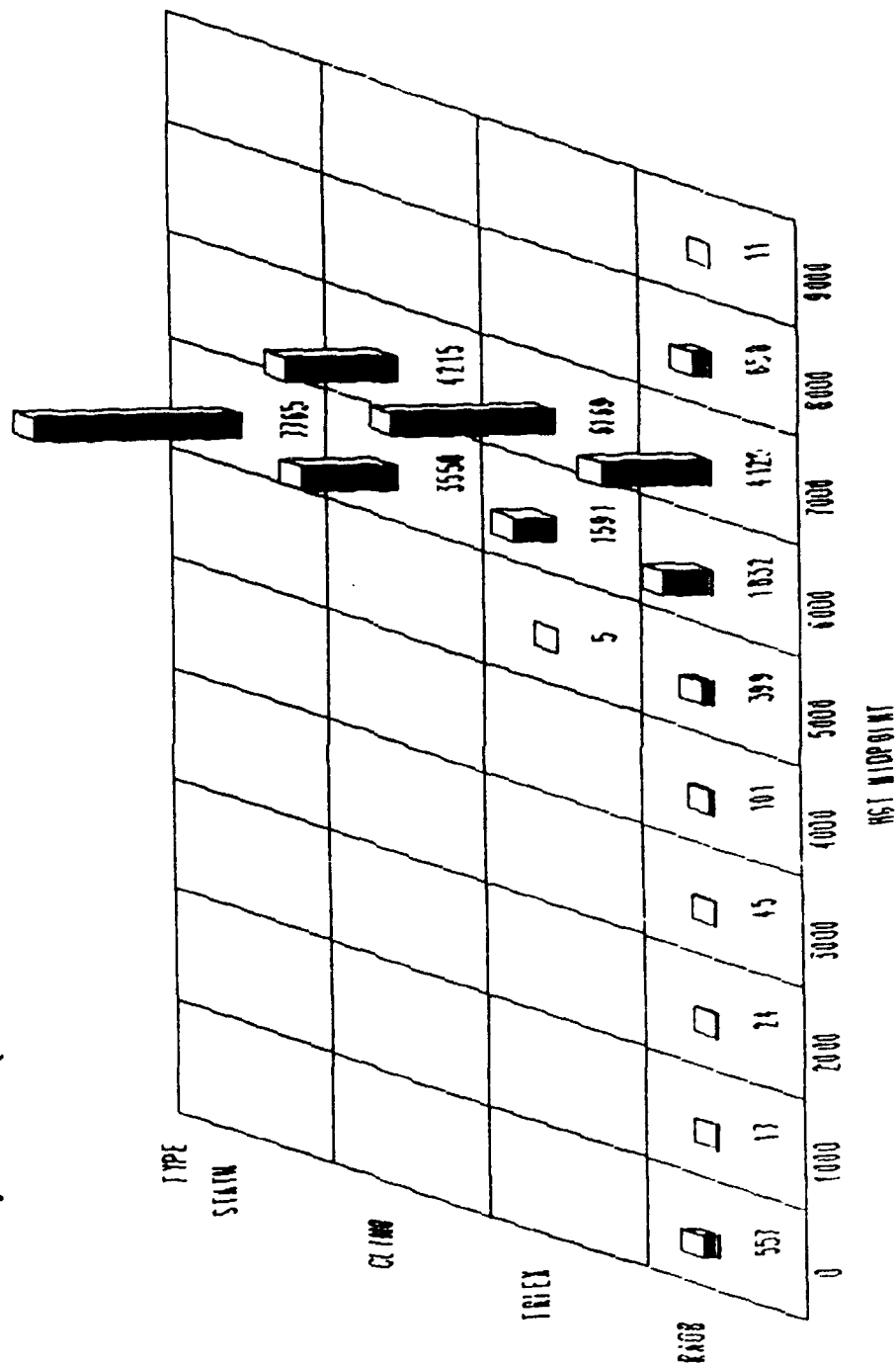


Figure 20-9

RMS ERRORS (meters) FOR
Phoenix, AZ (INW RAOB Data)
Range=175 NM Angle=0 DEG

ENTIRE POR

TRIEXPONENTIAL	CLIMATOLOGY	STANDARD ATMOSPHERE
603	587	976

RMS HEIGHT ERRORS FROM THE TRIEXPONENTIAL MODEL
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	470	234	624
FEB	583	468	678
MAR	316	167	414
APR	658	246	897
MAY	368	177	489
JUN	700	448	881
JUL	664	543	767
AUG	911	755	1039
SEP	734	352	969
OCT	599	194	824
NOV	356	154	483
DEC	620	185	860

RMS HEIGHT ERRORS FROM CLIMATOLOGY
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	393	257	493
FEB	558	535	581
MAR	270	193	329
APR	611	252	827
MAY	339	192	439
JUN	745	631	842
JUL	742	700	781
AUG	904	816	981
SEP	721	345	952
OCT	562	221	764
NOV	288	184	367
DEC	559	221	762

Figure 21-1

Phoenix, AZ (INW RADOB Data) Range=175 NM Angle=0 DEG

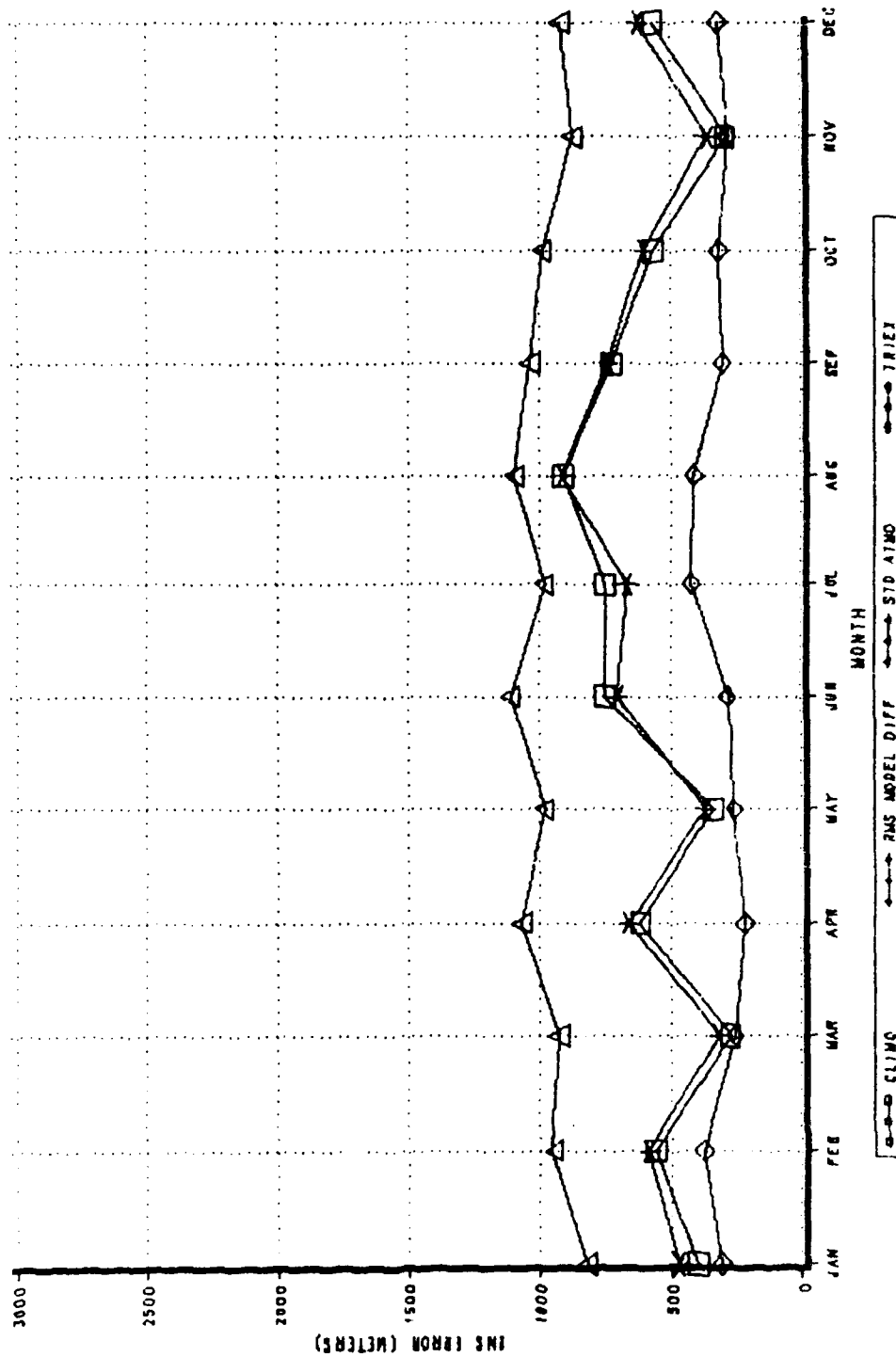


Figure 21-2

MONTHLY RMS HEIGHT ERRORS BY HOUR

Phoenix, AZ (INW RAD8 Data)
Range=175 NM Angle=0 DEG

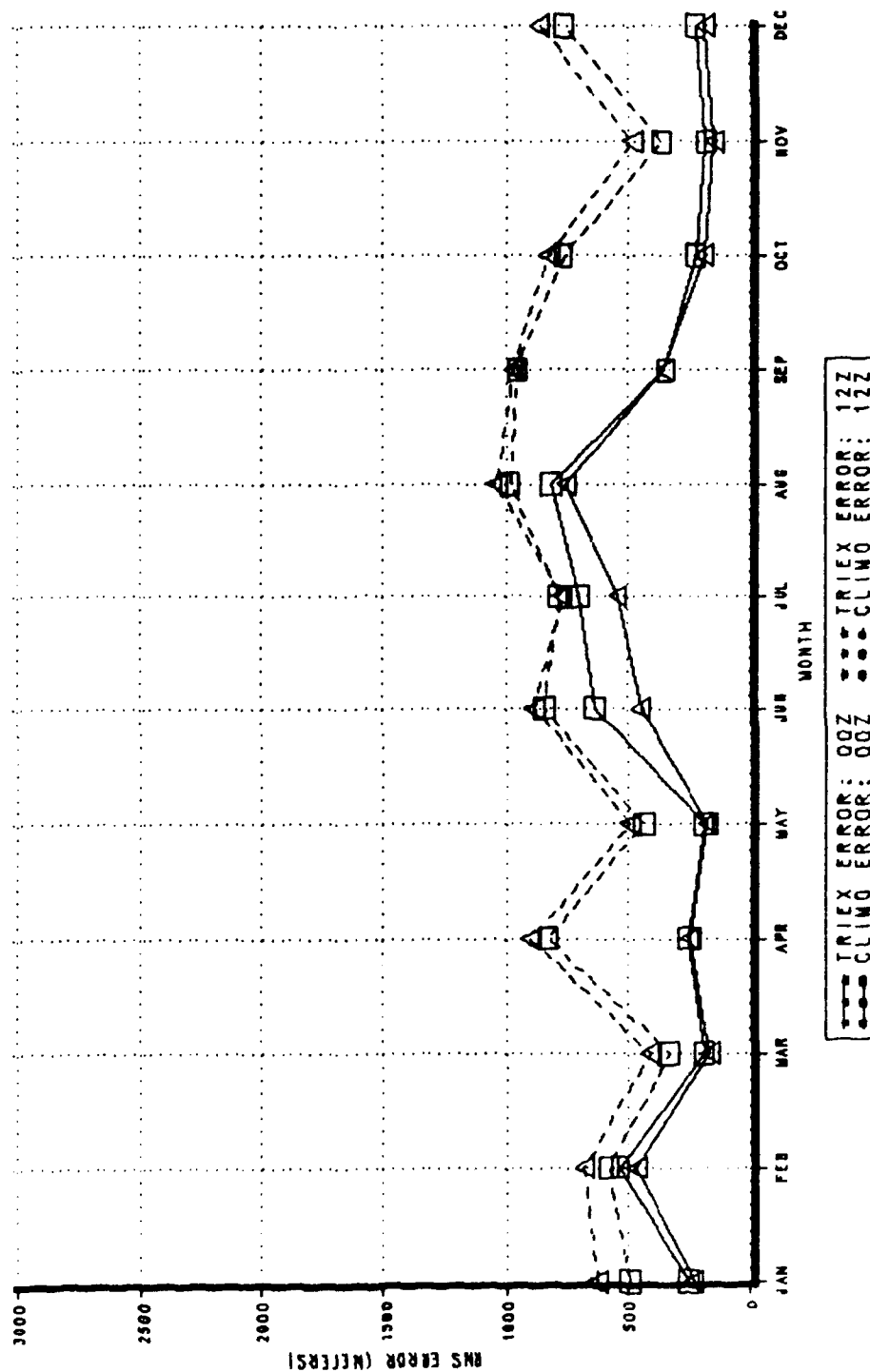


Figure 21-3

ERROR STATISTICS
 Phoenix, AZ (INW RAOB Data)
 Range=175 NM Angle=0 DEG

MODEL	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
TRIEXPONENTIAL	149.34	584.05	-1643.0	7075.0
CLIMATOLOGY	14.54	587.20	-1344.5	7117.9
STANDARD ATMOSPHERE	-727.58	650.76	-1959.2	6088.2

Figure 21-4

TRIEXPONENTIAL MODEL ERRORS
Phoenix, AZ (INW RAOB Data)
Range=175 NM Angle=0 DEG

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-1500	2	0.0	2	0.0
-1000	15	0.2	17	0.2
-500	680	9.2	697	9.4
0	4800	64.9	5497	74.3
500	1405	19.0	6902	93.3
1000	329	4.4	7231	97.7
1500	77	1.0	7308	98.8
2000	34	0.5	7342	99.2
2500	10	0.1	7352	99.4
3000	8	0.1	7360	99.5
3500	2	0.0	7362	99.5
4000	2	0.0	7364	99.5
4500	4	0.1	7368	99.6
5000	2	0.0	7370	99.6
5500	3	0.0	7373	99.6
6000	3	0.0	7376	99.7
6500	13	0.2	7389	99.9
7000	11	0.1	7400	100.0

CLIMATOLOGY ERRORS

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-1500	2	0.0	2	0.0
-1000	74	1.0	76	1.0
-500	1454	19.6	1530	20.7
0	4761	64.3	6291	85.0
500	799	10.8	7090	95.8
1000	168	2.3	7258	98.1
1500	60	0.8	7318	98.9
2000	23	0.3	7341	99.2
2500	9	0.1	7350	99.3
3000	9	0.1	7359	99.4
3500	2	0.0	7361	99.5
4000	4	0.1	7365	99.5
4500	1	0.0	7366	99.5
5000	3	0.0	7369	99.6
5500	3	0.0	7372	99.6
6000	5	0.1	7377	99.7
6500	14	0.2	7391	99.9
7000	9	0.1	7400	100.0

Figure 21-5

HEIGHT ERROR DISTRIBUTION Phoenix, AZ (INW RAOB Data) Range=175 NM Angle=0 DEG

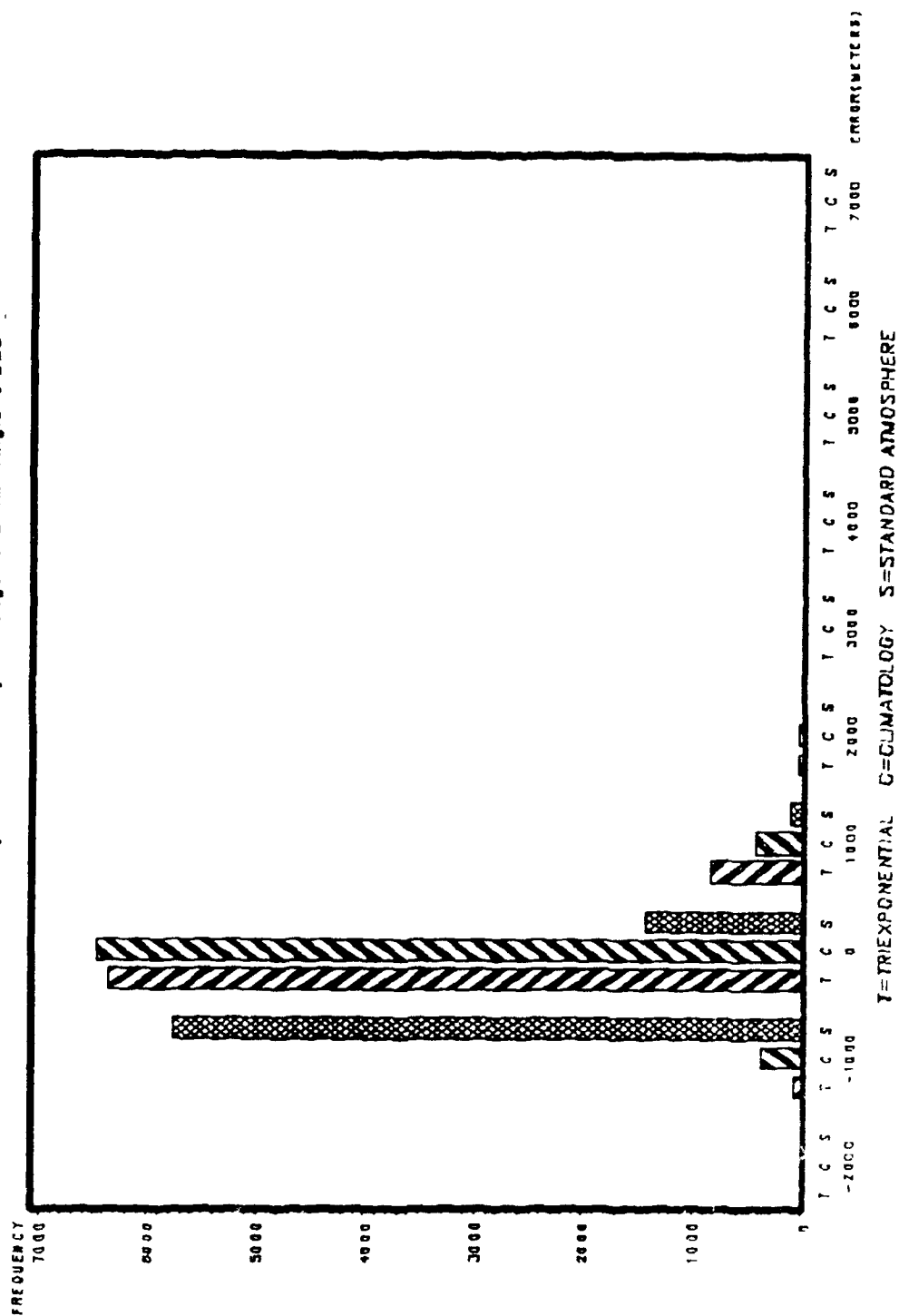


Figure 21-6

TRIEXPONENTIAL MODEL ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
-1500	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00	
-1000	0.00	0.00	0.16	0.00	0.32	0.16	0.65	1.01	0.16	0.00	0.00	0.00	
-500	1.72	1.19	3.21	3.20	4.91	6.56	22.75	31.82	22.80	7.70	3.38	2.19	
0	62.66	70.14	76.24	73.23	72.78	65.08	53.19	46.13	55.70	59.50	68.92	64.16	
500	29.69	22.01	16.05	16.50	17.25	20.49	14.80	11.11	13.19	16.35	23.19	26.29	
1000	4.38	5.12	3.37	4.71	3.64	4.59	4.26	4.88	5.05	3.95	3.38	6.10	
1500	1.09	0.34	0.80	0.84	0.32	1.97	1.96	2.19	0.81	1.26	0.64	0.31	
2000	0.16	0.51	0.16	0.17	0.47	0.00	1.31	1.18	0.65	0.31	0.48	0.16	
2500	0.16	0.00	0.00	0.17	0.16	0.16	0.33	0.17	0.16	0.16	0.00	0.16	
3000	0.00	0.00	0.00	0.17	0.16	0.33	0.00	0.00	0.49	0.16	0.00	0.00	
3500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.16	0.00	0.00	
4000	0.00	0.17	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4500	0.00	0.17	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.16	0.00	0.16	
5000	0.00	0.00	0.00	0.17	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	
5500	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.17	0.16	0.00	0.00	0.00	
6000	0.00	0.17	0.00	0.00	0.00	0.00	0.16	0.00	0.16	0.00	0.00	0.00	
6500	0.00	0.00	0.00	0.00	0.00	0.16	0.16	1.01	0.49	0.00	0.00	0.31	
7000	0.16	0.17	0.00	0.34	0.00	0.49	0.00	0.17	0.00	0.31	0.00	0.16	
Total	640	586	623	594	632	610	611	594	614	636	621	639	7400

Figure 21-7

CLIMATOLOGY ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												Total
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
-1500	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.17	0.00	0.00	0.00	0.00	
-1000	0.00	0.17	0.00	0.00	0.16	0.16	3.60	6.06	0.98	0.31	0.32	0.47	
-500	21.72	25.94	11.88	10.77	15.98	14.10	25.37	25.76	21.82	23.43	14.81	24.26	
0	66.09	64.16	75.60	73.06	69.30	66.56	52.05	49.83	57.98	62.74	72.79	61.34	
500	9.53	7.85	10.91	11.78	11.39	12.35	10.80	10.27	12.87	8.81	9.98	12.36	
1000	2.19	0.68	1.28	2.69	2.22	2.79	3.27	3.87	3.26	2.99	1.61	0.47	
1500	0.16	0.34	0.16	0.51	0.32	2.13	1.80	1.85	1.30	0.63	0.32	0.31	
2000	0.16	0.17	0.16	0.17	0.47	0.00	1.31	0.17	0.49	0.31	0.16	0.16	
2500	0.00	0.00	0.00	0.00	0.16	0.16	0.82	0.17	0.16	0.00	0.00	0.00	
3000	0.00	0.00	0.00	0.17	0.00	0.16	0.00	0.51	0.33	0.31	0.00	0.00	
3500	0.00	0.17	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4000	0.00	0.00	0.00	0.00	0.00	0.16	0.16	0.00	0.00	0.16	0.00	0.16	
4500	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	
5000	0.00	0.17	0.00	0.17	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00	
5500	0.00	0.00	0.00	0.17	0.00	0.00	0.16	0.17	0.00	0.00	0.00	0.00	
6000	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.67	0.00	0.00	0.00	0.00	
6500	0.16	0.17	0.00	0.34	0.00	0.00	0.16	0.00	0.65	0.31	0.00	0.47	
7000	0.00	0.17	0.00	0.00	0.00	0.66	0.16	0.51	0.00	0.00	0.00	0.00	
Total	640	586	623	594	632	610	611	594	614	616	621	619	7400

Figure 21-8

HEIGHT DISTRIBUTION

Phoenix, AZ (INW RAOB Data) Range=175 NM Angle=0 DEG

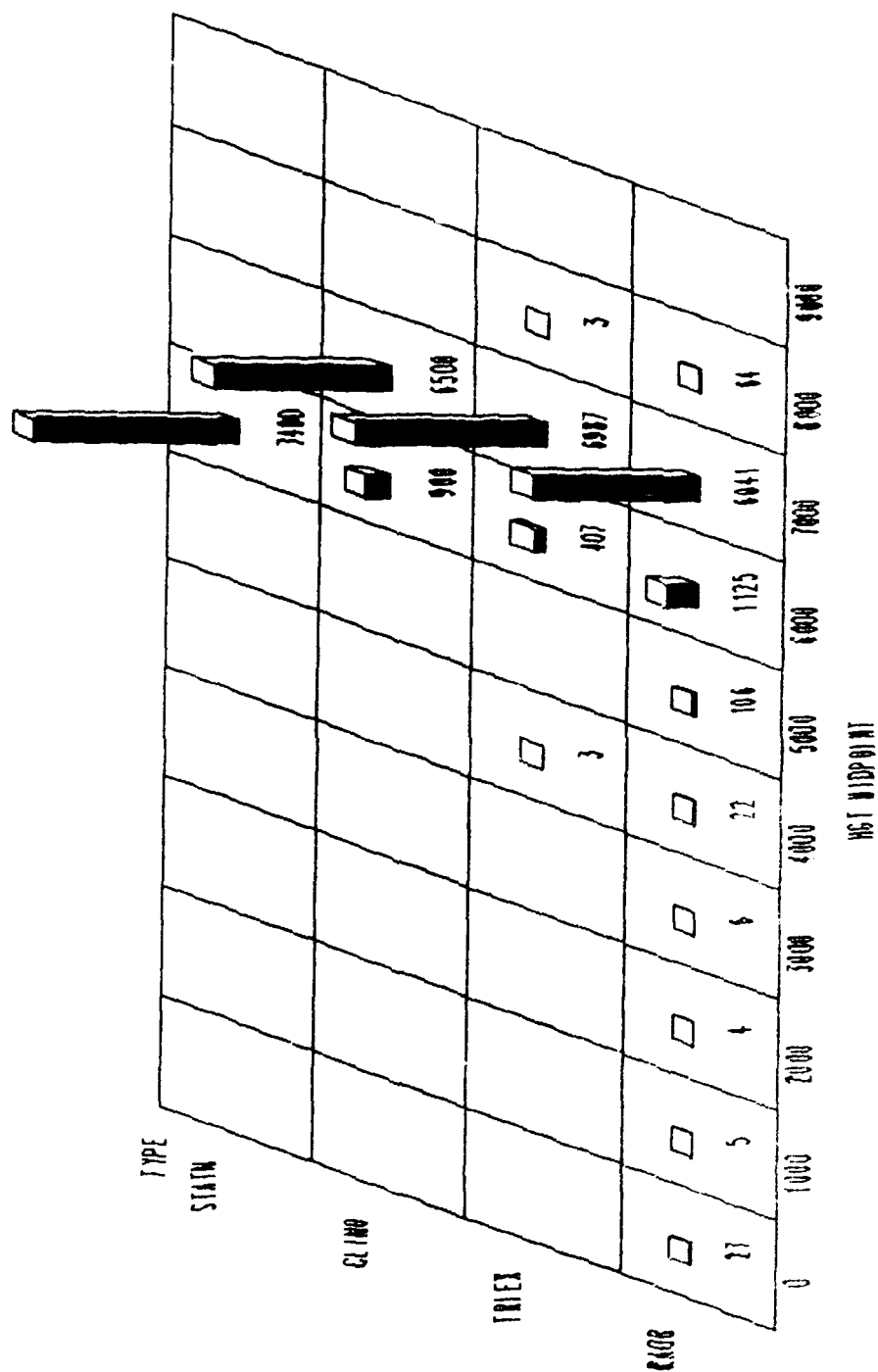


Figure 21-9

RMS ERRORS (meters) FOR
 Richmond, FL (PBI RAOB Data)
 Range=175 NM Angle=0 DEG

ENTIRE POR

TRIEXPONENTIAL	CLIMATOLOGY	STANDARD ATMOSPHERE
1391	1379	1384

RMS HEIGHT ERRORS FROM THE TRIEXPONENTIAL MODEL
 BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	1438	1079	171
FEB	1589	1473	1698
MAR	1355	955	1659
APR	1464	1103	1745
MAY	1406	1392	1421
JUN	1442	1445	1438
JUL	1486	1552	1419
AUG	1375	1452	1295
SEP	1262	1326	1195
OCT	1297	1414	1171
NOV	1378	1444	1310
DEC	1192	1020	1343

RMS HEIGHT ERRORS FROM CLIMATOLOGY
 BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	1444	1071	1736
FEB	1681	1561	1794
MAR	1373	1022	1650
APR	1497	1131	1784
MAY	1476	1510	1442
JUN	1423	1449	1397
JUL	1530	1632	1425
AUG	1245	1370	1110
SEP	1110	1215	995
OCT	1222	1379	1045
NOV	1342	1421	1258
DEC	1150	989	1292

Figure 22-1

MONTHLY RMS HEIGHT ERRORS
 Richmond, FL (PBI RA08 Data) Range=175 NM Angle=0 DEG

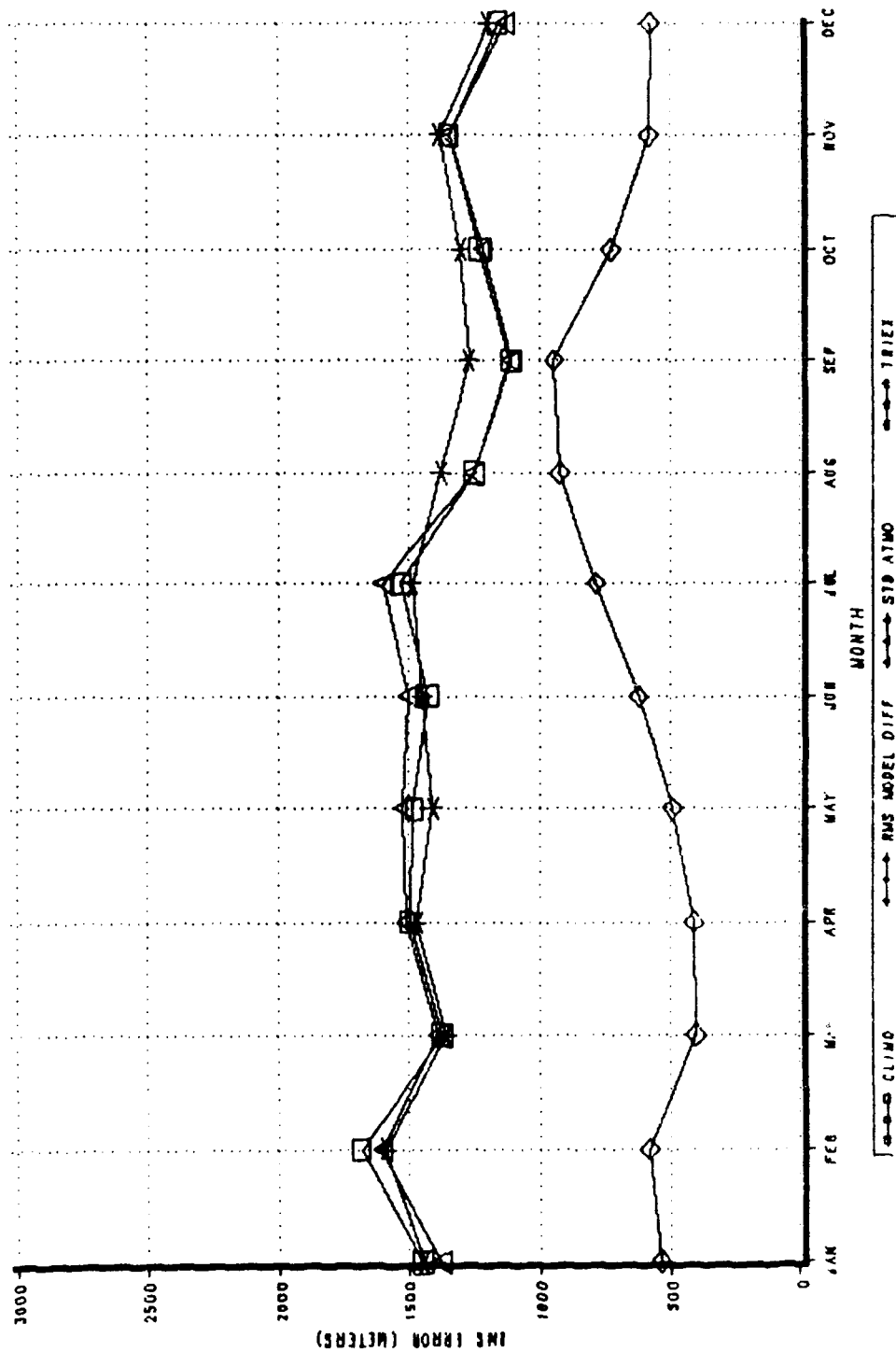


Figure 22-2

MONTHLY RMS HEIGHT ERRORS BY HOUR

Richmond, FL (PBI RAOB Data)
Range=173 NM Angle=0 DEG

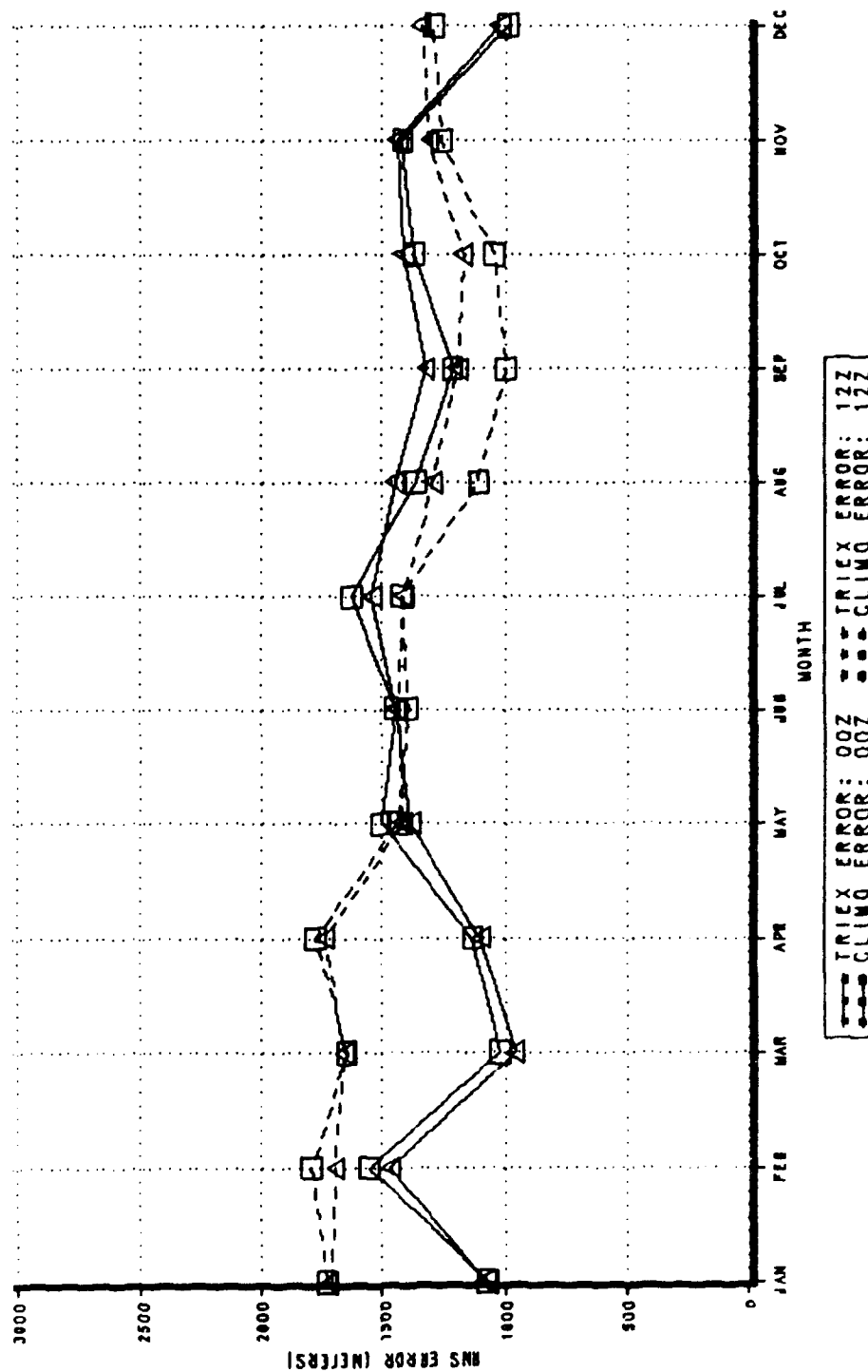


Figure 22-3

ERROR STATISTICS
 Richmond, FL (PBI RAOB Data)
 Range=175 NM Angle=0 DEG

MODEL	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
TRIEXPONENTIAL	-229.91	1371.60	-2920.0	6449.4
CLIMATOLOGY	309.79	1343.82	-3731.6	6338.7
STANDARD ATMOSPHERE	310.92	1348.31	-3735.9	5970.7

Figure 22-4

TRIEXPONENTIAL MODEL ERRORS
 Richmond, FL (PBI RAOB Data)
 Range=175 NM Angle=0 DEG

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-3000	3	0.0	3	0.0
-2500	3	0.0	6	0.1
-2000	75	1.0	81	1.1
-1500	726	9.4	807	10.5
-1000	1965	25.6	2772	36.0
-500	2286	29.7	5058	65.8
0	1341	17.4	6399	83.2
500	545	7.1	6944	90.3
1000	241	3.1	7185	93.4
1500	90	1.2	7275	94.6
2000	42	0.5	7317	95.1
2500	25	0.3	7342	95.5
3000	22	0.3	7364	95.8
3500	14	0.2	7378	95.9
4000	11	0.1	7389	96.1
4500	9	0.1	7398	96.2
5000	116	1.5	7514	97.7
5500	83	1.1	7597	98.8
6000	78	1.0	7675	99.8
6500	15	0.2	7690	100.0

CLIMATOLOGY ERRORS

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-3500	2	0.0	2	0.0
-3000	4	0.1	6	0.1
-2500	3	0.0	9	0.1
-2000	7	0.1	16	0.2
-1500	61	0.8	77	1.0
-1000	472	6.1	549	7.1
-500	1885	24.5	2434	31.7
0	2548	33.1	4982	64.8
500	1420	18.5	6402	83.3
1000	549	7.1	6951	90.4
1500	233	3.0	7184	93.4
2000	96	1.2	7280	94.7
2500	42	0.5	7322	95.2
3000	16	0.2	7338	95.4
3500	26	0.3	7364	95.8
4000	13	0.2	7377	95.9
4500	8	0.1	7385	96.0
5000	11	0.1	7396	96.2
5500	44	0.6	7440	96.7
6000	217	2.8	7657	99.6
6500	33	0.4	7690	100.0

Figure 22-5

TRIEXPONENTIAL MODEL ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												Total
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
-3000	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.16	0.00	0.16	0.16	0.64
-2500	0.00	0.00	0.00	0.00	0.00	0.00	0.31	0.00	0.00	0.15	0.00	0.00	0.46
-2000	0.16	0.16	0.46	0.16	0.45	0.77	1.23	1.77	2.48	0.76	1.11	0.00	9.00
-1500	2.93	1.64	1.99	2.64	4.20	14.33	16.72	25.19	19.57	12.23	6.18	4.12	100.00
-1000	15.64	16.91	16.87	17.08	24.02	32.97	29.75	32.73	36.34	44.25	27.58	20.72	100.00
-500	33.39	34.00	34.66	34.01	30.63	24.81	22.70	20.66	24.69	27.37	32.81	37.45	100.00
0	24.27	24.00	27.61	22.67	22.82	10.63	11.20	9.35	8.07	12.84	16.48	20.50	100.00
500	12.05	8.91	7.82	9.63	7.51	5.86	6.90	2.87	3.73	5.50	6.62	8.74	100.00
1000	4.23	5.27	1.83	4.66	1.95	3.24	2.76	1.36	1.71	2.29	1.01	3.73	100.00
1500	1.63	0.91	1.69	1.86	1.05	1.08	1.38	0.45	0.16	0.61	1.90	1.34	100.00
2000	0.98	0.55	0.46	1.09	1.05	0.62	0.31	0.30	0.62	0.15	0.32	0.15	100.00
2500	0.16	0.55	0.15	0.31	0.90	0.31	0.45	0.15	0.16	0.31	0.48	0.00	100.00
3000	0.00	0.16	0.15	0.47	0.45	0.62	0.92	0.15	0.00	0.46	0.00	0.00	100.00
3500	0.00	1.00	0.00	0.16	0.15	0.15	0.46	0.00	0.00	0.15	0.00	0.15	100.00
4000	0.33	0.00	0.00	0.00	0.00	0.31	0.61	0.15	0.16	0.00	0.16	0.00	100.00
4500	0.00	0.00	0.15	0.16	0.15	0.31	0.15	0.30	0.16	0.00	0.00	0.00	100.00
5000	0.00	0.55	0.31	0.78	2.70	3.08	4.14	2.41	1.55	1.07	1.23	0.00	100.00
5500	0.81	1.82	1.04	2.17	1.50	0.92	0.00	0.15	0.47	1.68	1.11	0.60	100.00
6000	1.70	1.27	1.99	2.02	0.45	0.00	0.00	0.00	0.00	0.15	0.95	1.94	100.00
6500	1.63	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	100.00
Total	614	550	652	644	666	649	652	663	644	654	631	672	6000

Figure 22-7

CLIMATOLOGY ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												Total
Col Per	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
-3500	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	
-3000	0.00	0.00	0.31	0.00	0.00	0.00	0.00	0.00	0.16	0.15	0.00	0.00	
-2500	0.00	0.18	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.16	0.00	
-2000	0.00	0.00	0.00	0.31	0.30	0.15	0.15	0.00	0.00	0.00	0.16	0.00	
-1500	0.16	0.00	0.92	0.31	0.60	2.77	2.15	0.90	0.31	0.46	0.03	0.15	
-1000	1.26	1.64	6.90	5.59	6.46	11.56	9.20	10.11	4.04	4.28	6.02	3.71	
-500	19.73	18.18	31.90	28.11	28.23	26.50	20.71	24.59	21.27	29.66	25.99	19.08	
0	34.53	35.64	32.82	31.99	29.58	27.27	27.76	29.11	38.35	33.33	35.82	41.88	
500	24.10	23.82	13.04	16.46	18.02	14.48	16.56	18.25	20.96	18.04	17.12	21.76	
1000	10.10	8.18	4.91	5.90	6.61	7.40	8.28	8.75	7.14	6.57	7.75	7.30	
1500	2.93	3.27	2.91	3.26	1.80	2.47	5.37	2.87	3.42	2.91	1.01	2.74	
2000	1.14	0.91	1.38	1.40	1.20	1.23	2.45	1.06	1.24	0.61	1.43	0.69	
2500	0.33	0.91	0.46	0.78	1.05	0.62	0.46	0.75	0.62	0.00	0.49	0.16	
3000	0.16	0.36	0.00	0.31	0.60	0.15	0.15	0.30	0.00	0.15	0.02	0.00	
3500	0.00	0.18	0.15	0.16	0.60	0.46	1.07	0.30	0.16	0.76	0.00	0.15	
4000	0.16	0.73	0.00	0.00	0.15	0.46	0.46	0.00	0.00	0.15	0.03	0.00	
4500	0.16	0.18	0.00	0.16	0.00	0.00	0.77	0.00	0.00	0.00	0.00	0.00	
5000	0.00	0.00	0.15	0.31	0.15	0.46	0.00	0.15	0.16	0.00	0.00	0.00	
5500	0.00	0.18	0.31	0.62	0.75	2.16	2.45	0.15	0.16	0.00	0.00	0.00	
6000	0.30	2.91	1.83	4.19	3.90	1.85	1.84	2.71	2.02	2.91	1.03	2.04	
6500	2.91	2.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Total	614	550	652	644	666	649	652	663	644	664	571	671	6097

Figure 22-8

HEIGHT DISTRIBUTION

Richmond, FL (PBI RAOB Data) Range = 175 NM Angle = 0 DEG

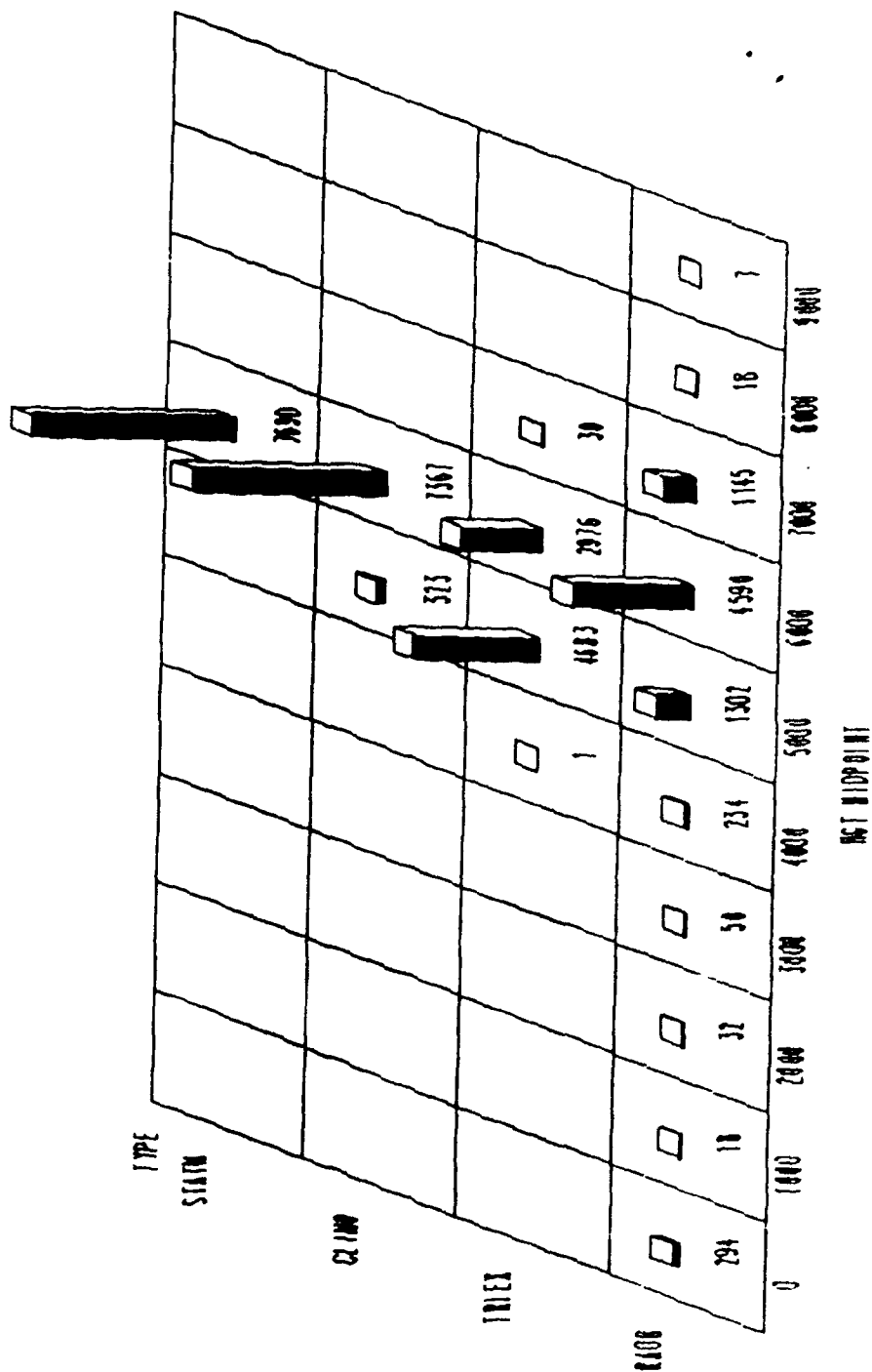


Figure 22-9

RMS ERRORS (meters) FOR
 Nashwauk, MN (INL RAOB Data)
 Range=175 NM Angle=0 DEG

ENTIRE FOR

TRIEXPONENTIAL	CLIMATOLOGY	STANDARD ATMOSPHERE
928	916	1018

RMS HEIGHT ERRORS FROM THE TRIEXPONENTIAL MODEL
 BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	261	158	333
FEB	196	125	246
MAR	266	173	333
APR	721	243	992
MAY	1143	805	1401
JUN	1352	535	1833
JUL	1536	1047	1904
AUG	1452	837	1873
SEP	984	295	1360
OCT	759	230	1048
NOV	657	174	913
DEC	256	161	325

RMS HEIGHT ERRORS FROM CLIMATOLOGY
 BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	248	168	307
FEB	199	141	243
MAR	253	146	326
APR	713	215	987
MAY	1171	871	1408
JUN	1302	580	1745
JUL	1540	1192	1824
AUG	1402	905	1762
SEP	962	355	1312
OCT	759	263	1040
NOV	654	190	906
DEC	257	178	317

Figure 23-1

MONTHLY RMS HEIGHT ERRORS
 Nashwauk, MN (INL RADAR Data) Range=175 NM Angle=0 DEG

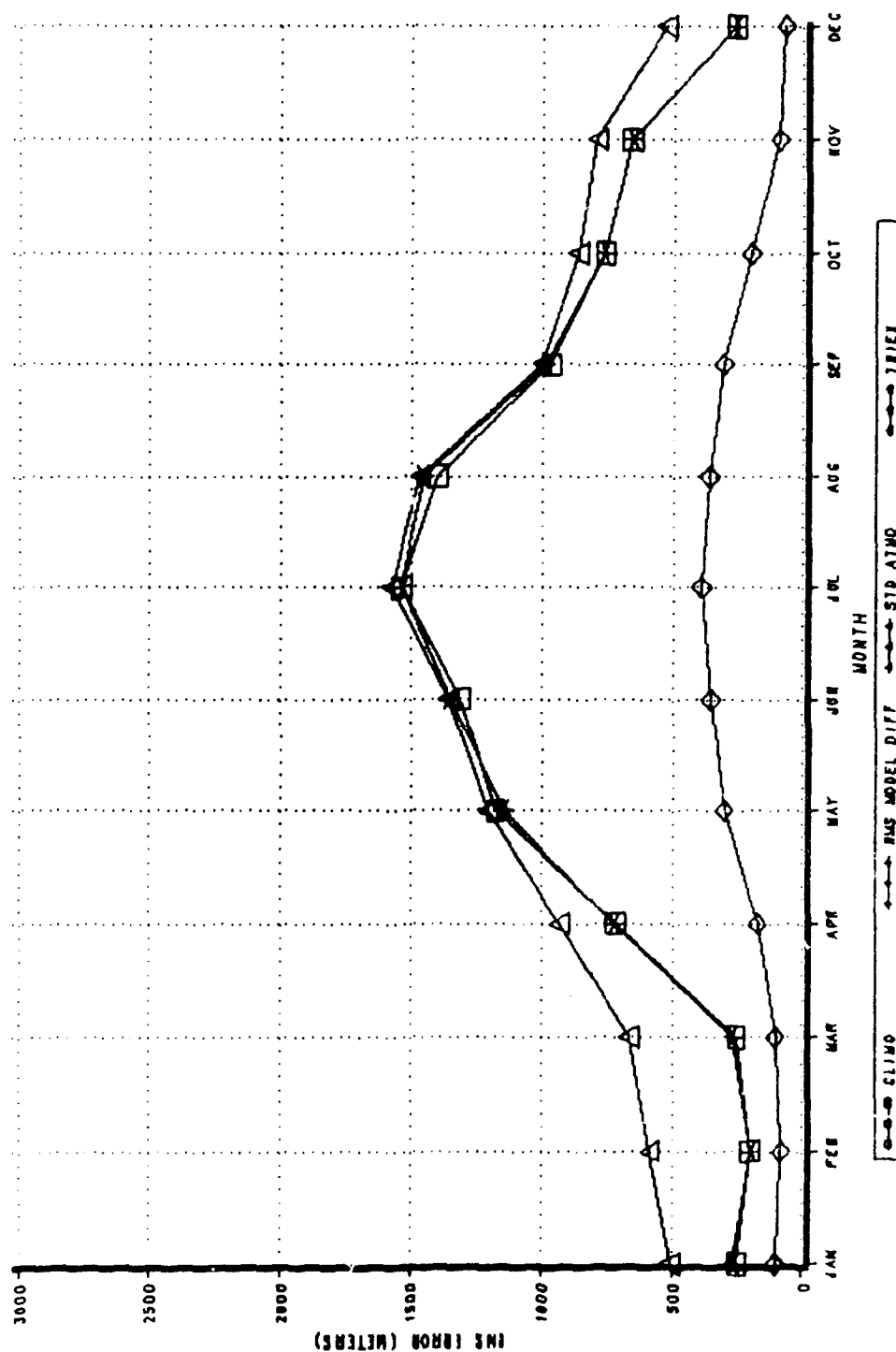


Figure 23-2

MONTHLY RMS HEIGHT ERRORS BY HOUR

Nashua, NH (IML RA08 Data)
Range=175 NM Angle=0 DEG

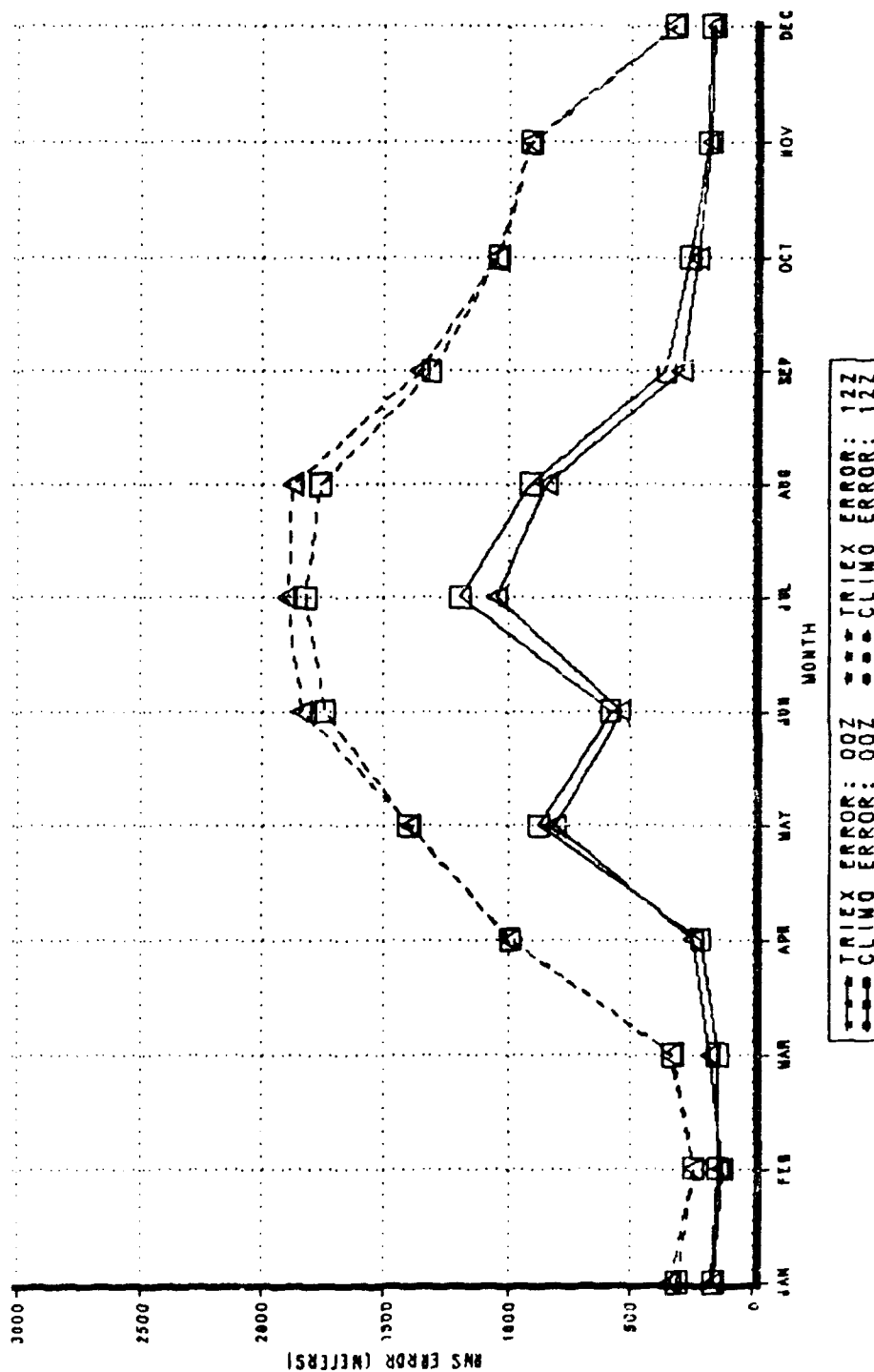


Figure 23-3

ERROR STATISTICS
 Nashwauk, MN (INL RAOB Data)
 Range=175 NM Angle=0 DEG

MODEL	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
TRIEXPONENTIAL	132.09	918.32	-1873.8	6649.4
CLIMATOLOGY	149.65	903.74	-1868.1	6855.0
STANDARD ATMOSPHERE	-269.21	982.01	-2409.8	6114.2

Figure 23-4

TRIEXPONENTIAL MODEL ERRORS
Nashwauk, MN (INL RAOB Data)
Range=175 NM Angle=0 DEG

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-2000	1	0.0	1	0.0
-1500	5	0.1	6	0.1
-1000	60	0.8	66	0.9
-500	1352	17.3	1418	18.1
0	4977	63.5	6395	81.6
500	927	11.8	7322	93.4
1000	204	2.6	7526	96.0
1500	94	1.2	7620	97.2
2000	21	0.3	7641	97.5
2500	24	0.3	7665	97.8
3000	14	0.2	7679	98.0
3500	10	0.1	7689	98.1
4000	4	0.1	7693	98.2
4500	3	0.0	7696	98.2
5000	9	0.1	7705	98.3
5500	13	0.2	7718	98.5
6000	62	0.8	7780	99.3
6500	56	0.7	7836	100.0

CLIMATOLOGY ERRORS

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-2000	2	0.0	2	0.0
-1500	9	0.1	11	0.1
-1000	100	1.3	111	1.4
-500	1122	14.3	1233	15.7
0	5039	64.3	6272	80.0
500	1055	13.5	7327	93.5
1000	219	2.8	7546	96.3
1500	72	0.9	7618	97.2
2000	29	0.4	7647	97.6
2500	22	0.3	7669	97.9
3000	12	0.2	7681	98.0
3500	7	0.1	7688	98.1
4000	6	0.1	7694	98.2
4500	4	0.1	7698	98.2
5000	4	0.1	7702	98.3
5500	24	0.3	7726	98.6
6000	64	0.8	7790	99.4
6500	43	0.5	7833	100.0
7000	3	0.0	7836	100.0

Figure 23-5

HEIGHT ERROR DISTRIBUTION Nashwauk, MN (INL RADAR Data) Range=175 NM Angle=0 DEG

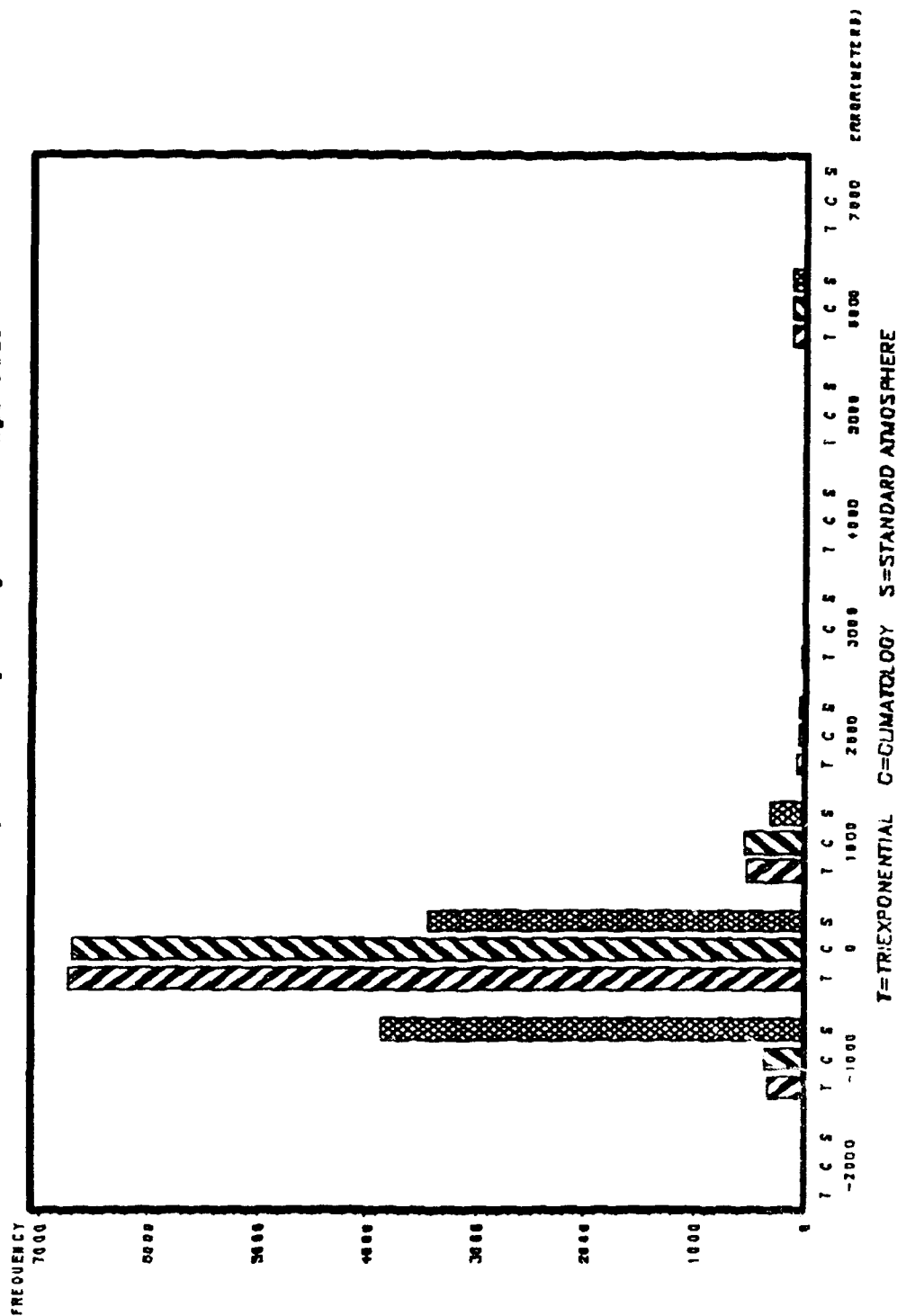


Figure 23-6

TRIEXPONENTIAL MODEL ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
-2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	
-1500	0.00	0.00	0.00	0.00	0.30	0.16	0.15	0.15	0.00	0.00	0.00	0.00	
-1000	0.00	0.00	0.00	0.31	1.04	2.06	2.86	2.01	0.94	0.00	0.00	0.00	
-500	0.90	2.60	8.21	21.52	29.29	36.03	36.99	32.51	22.99	12.52	2.92	0.90	
0	75.75	85.69	79.85	64.09	51.04	36.03	34.29	37.46	55.12	4.96	84.95	82.46	
500	21.54	11.22	10.30	9.44	8.88	13.02	10.23	11.76	12.44	8.94	8.91	15.29	
1000	1.36	0.49	1.49	2.01	3.40	4.92	3.91	5.42	4.25	1.49	1.69	0.90	
1500	0.30	0.00	0.00	1.08	2.07	2.54	3.61	2.32	1.26	0.60	0.31	0.30	
2000	0.15	0.00	0.00	0.15	0.30	0.61	0.45	1.39	0.16	0.00	0.00	0.00	
2500	0.00	0.00	0.00	0.31	0.59	0.16	1.05	0.77	0.47	0.15	0.15	0.00	
3000	0.00	0.00	0.15	0.00	0.15	0.00	0.45	0.62	0.31	0.15	0.15	0.15	
3500	0.00	0.00	0.00	0.15	0.30	0.32	0.30	0.46	0.00	0.00	0.00	0.00	
4000	0.00	0.00	0.00	0.00	0.00	0.16	0.15	0.15	0.00	0.00	0.15	0.00	
4500	0.00	0.00	0.00	0.00	0.15	0.16	0.15	0.00	0.00	0.00	0.00	0.00	
5000	0.00	0.00	0.00	0.00	0.15	0.00	0.45	0.62	0.16	0.00	0.00	0.00	
5500	0.00	0.00	0.00	0.15	0.00	0.00	0.75	0.77	0.16	0.15	0.00	0.00	
6000	0.00	0.00	0.00	0.00	0.44	1.43	3.91	2.94	0.79	0.00	0.00	0.00	
6500	0.00	0.00	0.00	0.77	1.92	2.38	0.30	0.46	0.64	1.04	0.77	0.00	
Total	664	615	670	646	676	630	665	646	635	671	651	667	7816

Figure 23-7

CLIMATOLOGY ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH													
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total	
-2000	0.00	0.00	0.00	0.00	0.00	0.16	0.15	0.00	0.00	0.00	0.00	0.00		
-1500	0.00	0.00	0.00	0.00	0.30	0.48	0.15	0.46	0.00	0.00	0.00	0.00		
-1000	0.00	0.16	0.15	0.15	1.04	3.17	3.76	4.64	2.36	0.00	0.00	0.00		
-500	4.22	3.41	6.57	14.09	13.76	27.30	26.32	31.89	28.66	9.09	5.22	2.25		
0	77.86	85.04	82.39	72.45	57.84	41.11	39.70	34.98	46.30	70.79	81.72	80.66		
500	16.11	10.89	9.55	8.67	15.68	16.51	13.68	14.09	14.02	16.39	9.98	15.74		
1000	1.66	0.49	1.19	2.48	4.73	4.76	4.81	4.80	4.72	1.64	1.54	0.75		
1500	0.15	0.00	0.00	0.62	2.22	1.11	3.01	1.70	0.94	0.45	0.31	0.45		
2000	0.00	0.00	0.00	0.31	0.74	0.79	1.05	0.77	0.47	0.15	0.15	0.00		
2500	0.00	0.00	0.00	0.15	0.15	0.16	0.75	1.55	0.31	0.15	0.00	0.15		
3000	0.00	0.00	0.15	0.00	0.44	0.16	0.60	0.00	0.16	0.15	0.15	0.00		
3500	0.00	0.00	0.00	0.15	0.30	0.16	0.15	0.31	0.00	0.00	0.00	0.00		
4000	0.00	0.00	0.00	0.00	0.30	0.16	0.30	0.00	0.00	0.00	0.15	0.00		
4500	0.00	0.00	0.00	0.00	0.00	0.16	0.15	0.15	0.16	0.00	0.00	0.00		
5000	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.46	0.00	0.00	0.00	0.00		
5500	0.00	0.00	0.00	0.00	0.00	0.16	0.45	2.79	0.16	0.15	0.00	0.00		
6000	0.00	0.00	0.00	0.15	0.00	3.49	3.76	0.77	1.73	0.00	0.00	0.00		
6500	0.00	0.00	0.00	0.77	1.92	0.16	1.20	0.62	0.00	1.04	0.77	0.00		
7000	0.00	0.00	0.00	0.00	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Total	664	615	670	646	676	630	665	646	635	671	651	667	7816	

Figure 23-8

HEIGHT DISTRIBUTION

Nashwaak, MN (INL RAOB Data) Range = 175 NM Angle = 0 DEG

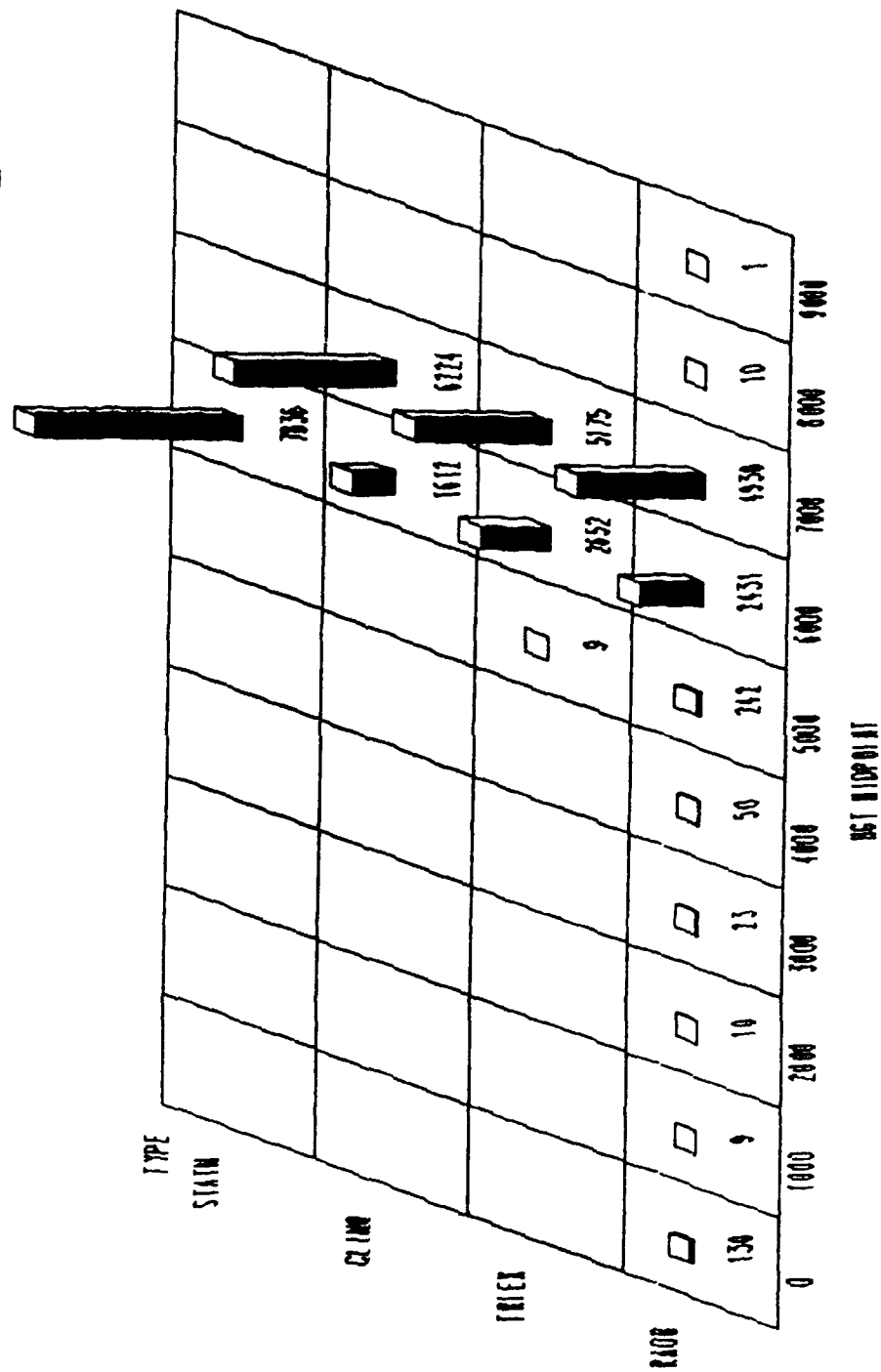


Figure 23-9

RMS ERRORS (meters) FOR
Lakeside, MT (GTF RAOB Data)
Range=175 NM Angle=0 DEG

ENTIRE POR

TRIEXPONENTIAL	CLIMATOLOGY	STANDARD ATMOSPHERE
206	2356	596

RMS HEIGHT ERRORS FROM THE TRIEXPONENTIAL MODEL
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	177	182	171
FEB	150	143	156
MAR	152	153	152
APR	298	131	401
MAY	160	159	161
JUN	187	196	179
JUL	206	184	226
AUG	339	415	241
SEP	232	165	286
OCT	156	160	152
NOV	155	153	157
DEC	146	157	134

RMS HEIGHT ERRORS FROM CLIMTOLOGY
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	173	178	167
FEB	150	150	151
MAR	166	173	158
APR	5740	8101	416
MAY	208	213	202
JUN	234	253	212
JUL	5692	8070	264
AUG	376	454	276
SEP	276	233	314
OCT	184	190	178
NOV	164	173	154
DEC	158	179	136

Figure 24-1

MONTHLY RMS HEIGHT ERRORS
 Lakeside, MT (GTRAOB Data) Range=175 NM Angle=0 DEG

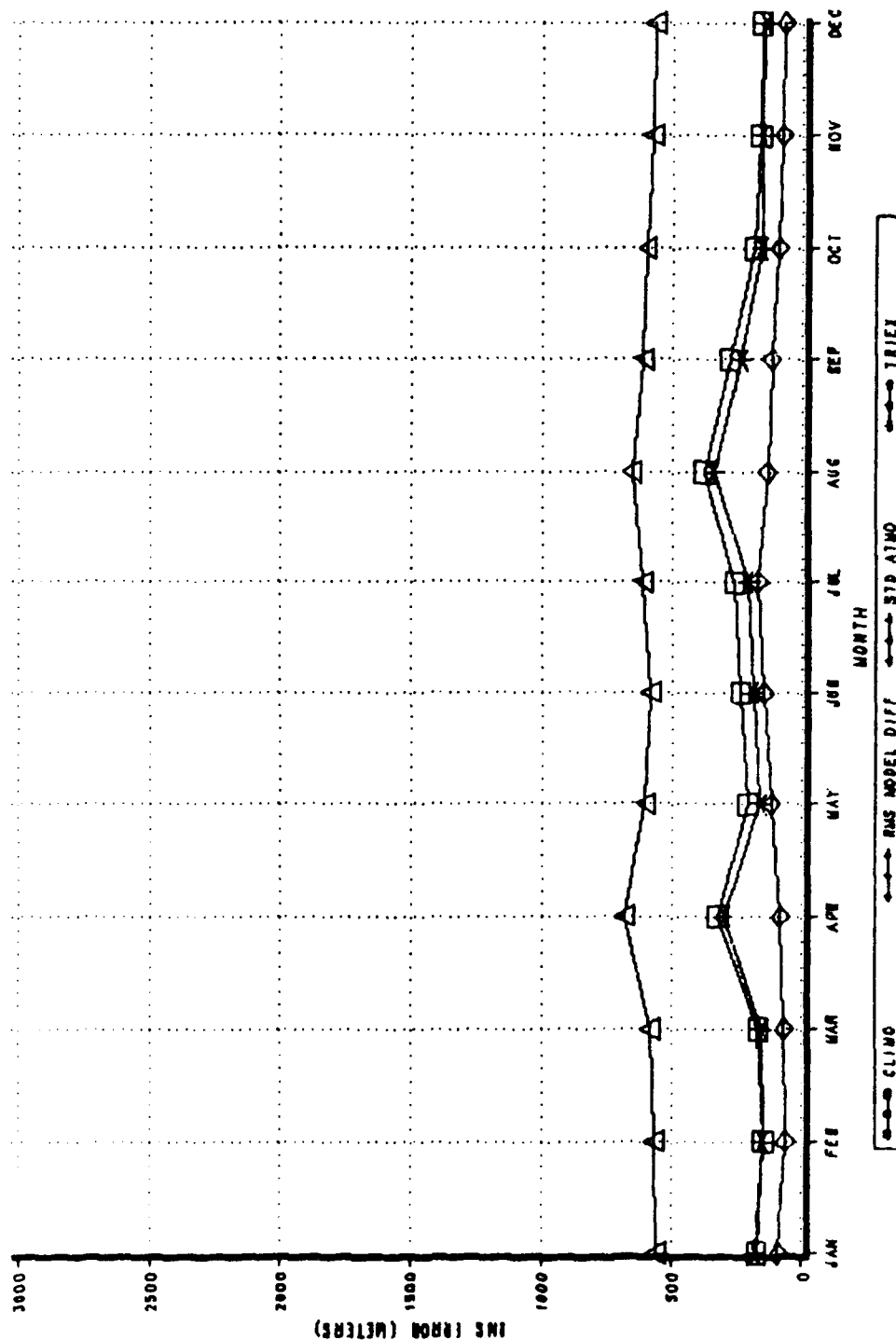


Figure 24-2

MONTHLY RMS HEIGHT ERRORS BY HOUR

Lakeside, MT (GTT RAD8 Data)
Range=175 NM Angle=0 DEG

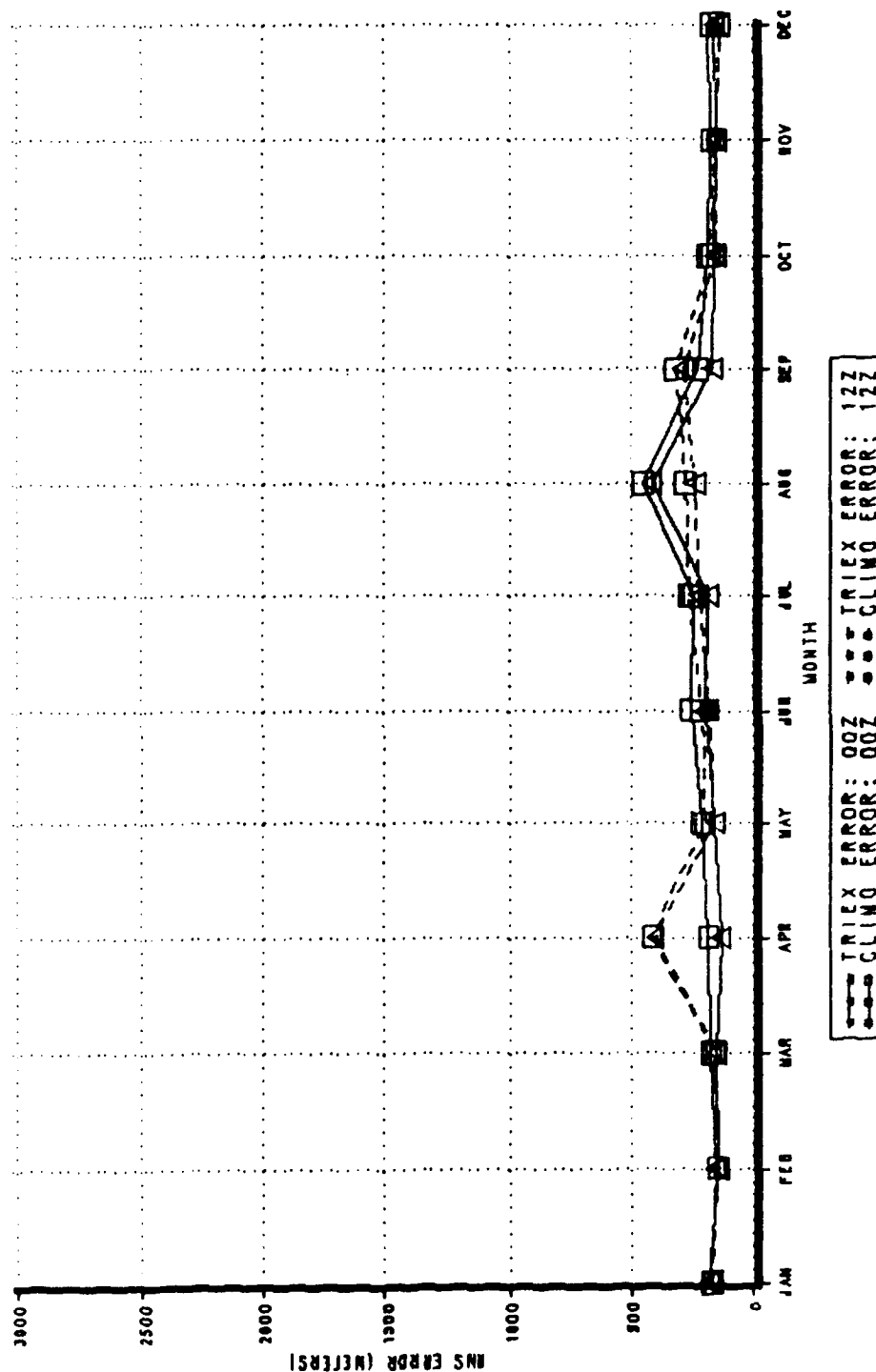


Figure 24-3

ERROR STATISTICS
 Lakeside, MT (GTF RAOB Data)
 Range=175 NM Angle=0 DEG

MODEL	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
TRIEXPONENTIAL	37.74	202.63	-1259.1	6837.6
CLIMATOLOGY	-643.60	2266.65	-8491.9	7031.0
STANDARD ATMOSPHERE	-548.32	233.51	-1330.9	6393.7

Figure 24-4

TRIEXPONENTIAL MODEL ERRORS
Lakeside, MT (GTF RAOB Data)
Range=175 NM Angle=0 DEG

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-1500	1	0.0	1	0.0
-1000	3	0.0	4	0.1
-500	233	3.0	237	3.1
0	6904	90.1	7141	93.2
500	486	6.3	7627	99.5
1000	31	0.4	7658	99.9
1500	3	0.0	7661	99.9
2500	1	0.0	7662	100.0
3000	1	0.0	7663	100.0
7000	2	0.0	7665	100.0

CLIMATOLOGY ERRORS

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-8500	114	1.5	114	1.5
-8000	490	6.4	604	7.9
-7500	39	0.5	643	8.4
-7000	2	0.0	645	8.4
-1000	1	0.0	646	8.4
-500	310	4.0	956	12.5
0	5934	77.4	6890	89.9
500	726	9.5	7616	99.4
1000	39	0.5	7655	99.9
1500	6	0.1	7661	99.9
2500	1	0.0	7662	100.0
3000	1	0.0	7663	100.0
7000	2	0.0	7665	100.0

Figure 24-5

HEIGHT ERROR DISTRIBUTION Lakeside, MT (GTF RAOB Data) Range=175 NM Angle=0 DEG

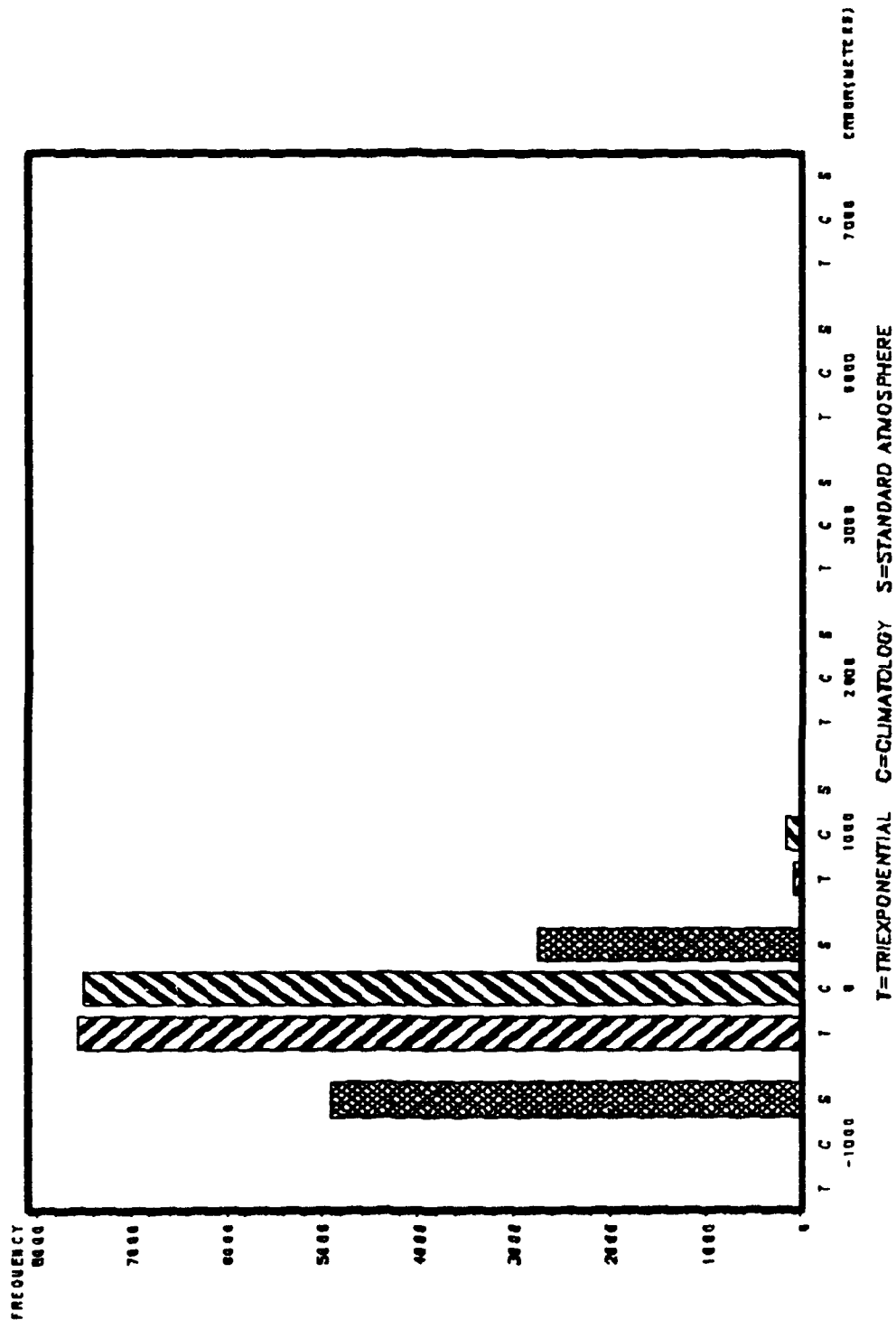


Figure 24-6

TRIEXPONENTIAL MODEL ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
-1500	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	
-1000	0.00	0.00	0.00	0.00	0.00	0.16	0.15	0.15	0.00	0.00	0.00	0.00	
-500	0.61	0.33	0.63	1.10	3.35	5.28	9.17	8.27	4.60	1.67	0.95	0.16	
0	91.09	92.49	92.55	94.99	89.94	87.52	83.33	84.53	87.96	91.19	92.74	92.90	
500	7.37	6.84	6.66	3.60	6.40	6.40	6.88	6.13	6.34	6.84	5.84	6.78	
1000	0.77	0.33	0.16	0.16	0.30	0.48	0.46	0.46	0.79	0.30	0.47	0.16	
1500	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.31	0.00	0.00	0.00	0.00	
2500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00	
3000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00	
7000	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	
Total	651	599	631	639	656	625	654	653	631	658	634	634	7665

Figure 24-7

CLIMATOLOGY ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												Total
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
-8500	0.00	0.00	0.00	7.36	0.00	0.00	10.24	0.00	0.00	0.00	0.00	0.00	0.00
-8000	0.00	0.00	0.00	41.16	0.00	0.00	34.71	0.00	0.00	0.00	0.00	0.00	0.00
-7500	0.00	0.00	0.00	1.56	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00
-7000	0.00	0.00	0.00	0.00	0.00	0.00	0.31	0.00	0.00	0.00	0.00	0.00	0.00
-1000	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-500	3.53	0.67	1.58	0.94	3.66	7.04	5.20	11.18	4.91	6.23	1.89	1.26	
0	90.32	92.15	90.49	46.01	77.13	78.56	37.00	72.89	78.29	85.11	92.43	90.54	
500	5.22	6.84	7.61	2.82	18.90	12.96	7.19	14.55	15.53	8.36	5.36	8.04	
1000	0.61	0.33	0.32	0.00	0.30	1.28	0.76	0.77	0.95	0.30	0.32	0.16	
1500	0.15	0.00	0.00	0.00	0.00	0.16	0.15	0.46	0.00	0.00	0.00	0.00	
2500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00	
3000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00	
7000	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	
Total	651	599	631	639	656	625	654	653	631	658	634	634	7665

Figure 24-8

HEIGHT DISTRIBUTION

Lakeside, MT (GTF RAOB Data) Range=175 NM Angle=0 DEG

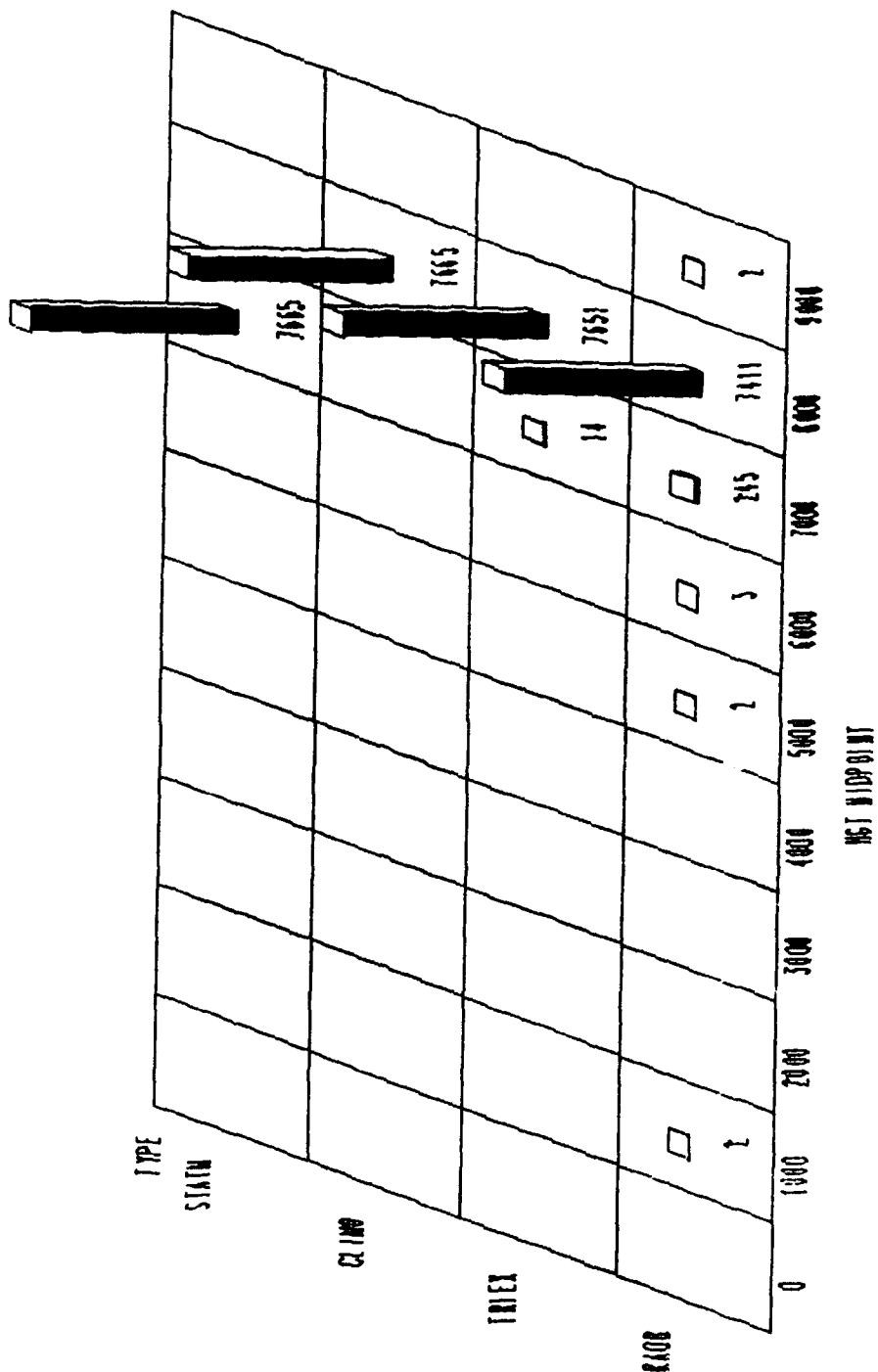


Figure 24-9

RMS ERRORS (meters) FOR
Mt Kaala, HI (LIH RAOB Data)
Range=175 NM Angle=0 DEG

ENTIRE POR

TRIEXPONENTIAL	CLIMATOLOGY	STANDARD ATMOSPHERE
1418	1231	1617

RMS HEIGHT ERRORS FROM THE TRIEXPONENTIAL MODEL
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	1842	1801	1882
FEB	1611	1512	1705
MAR	1618	1384	1822
APR	909	928	891
MAY	1042	1096	984
JUN	1353	1376	1330
JUL	1216	1095	1325
AUG	1539	1330	1726
SEP	1265	1011	1476
OCT	1333	1424	1237
NOV	1531	1574	1487
DEC	1498	1379	1611

RMS HEIGHT ERRORS FROM CLIMATOLOGY
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	1583	1537	1627
FEB	1452	1370	1530
MAR	1412	1206	1591
APR	741	774	706
MAY	872	959	774
JUN	1174	1224	1123
JUL	1025	914	1125
AUG	1351	1157	1523
SEP	1145	934	1322
OCT	1163	1259	1060
NOV	1310	1349	1271
DEC	1288	1151	1413

Figure 25-1

MONTHLY RMS HEIGHT ERRORS
 Mt Kilauea, HI (LIH RAOB Data) Range=175 NM Angle=0 DEG

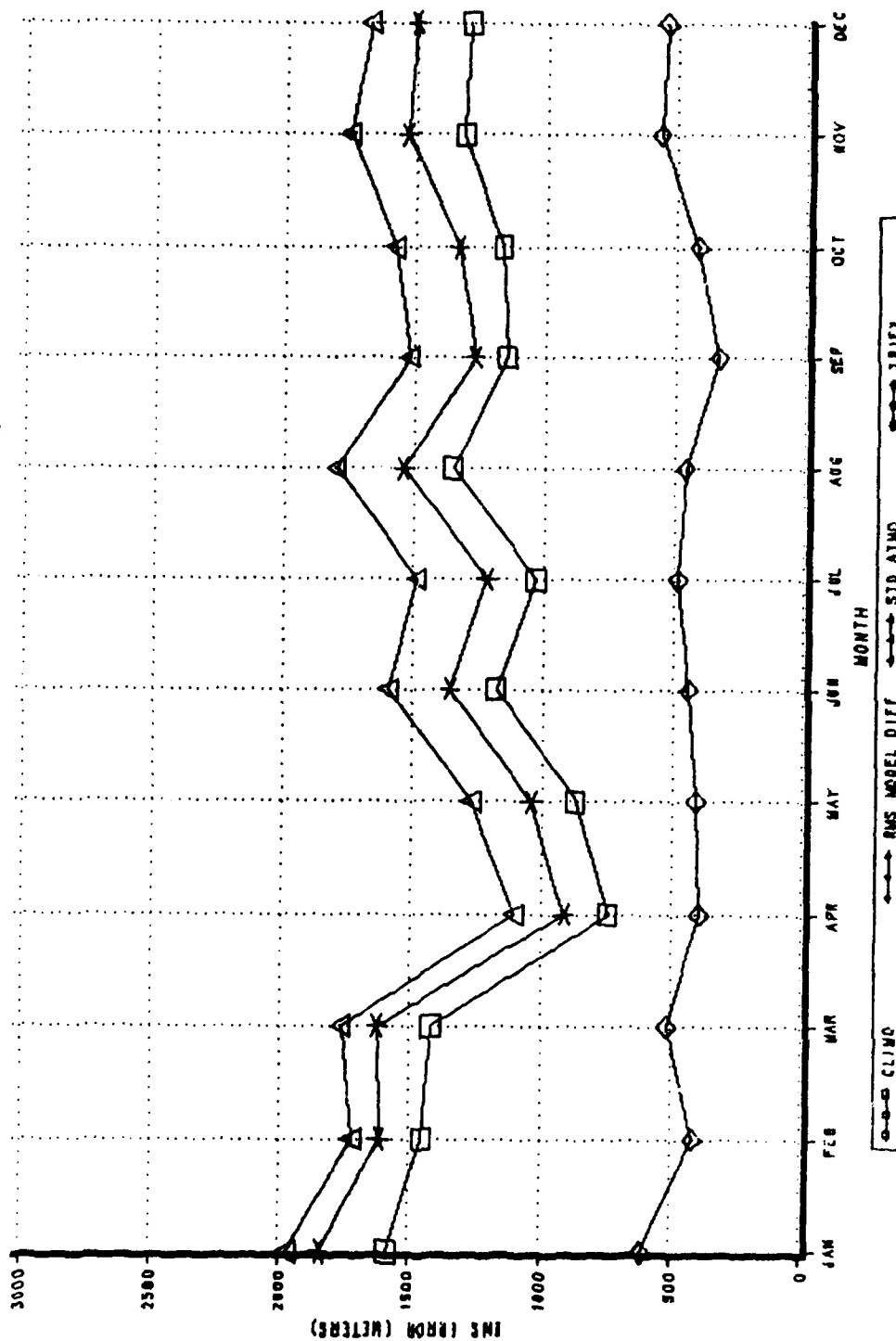


Figure 25-2

MONTHLY RMS HEIGHT ERRORS BY HOUR

Mt Koda, HI (LIH RADAR Data)
Range=173 NM Angle=0 DEG

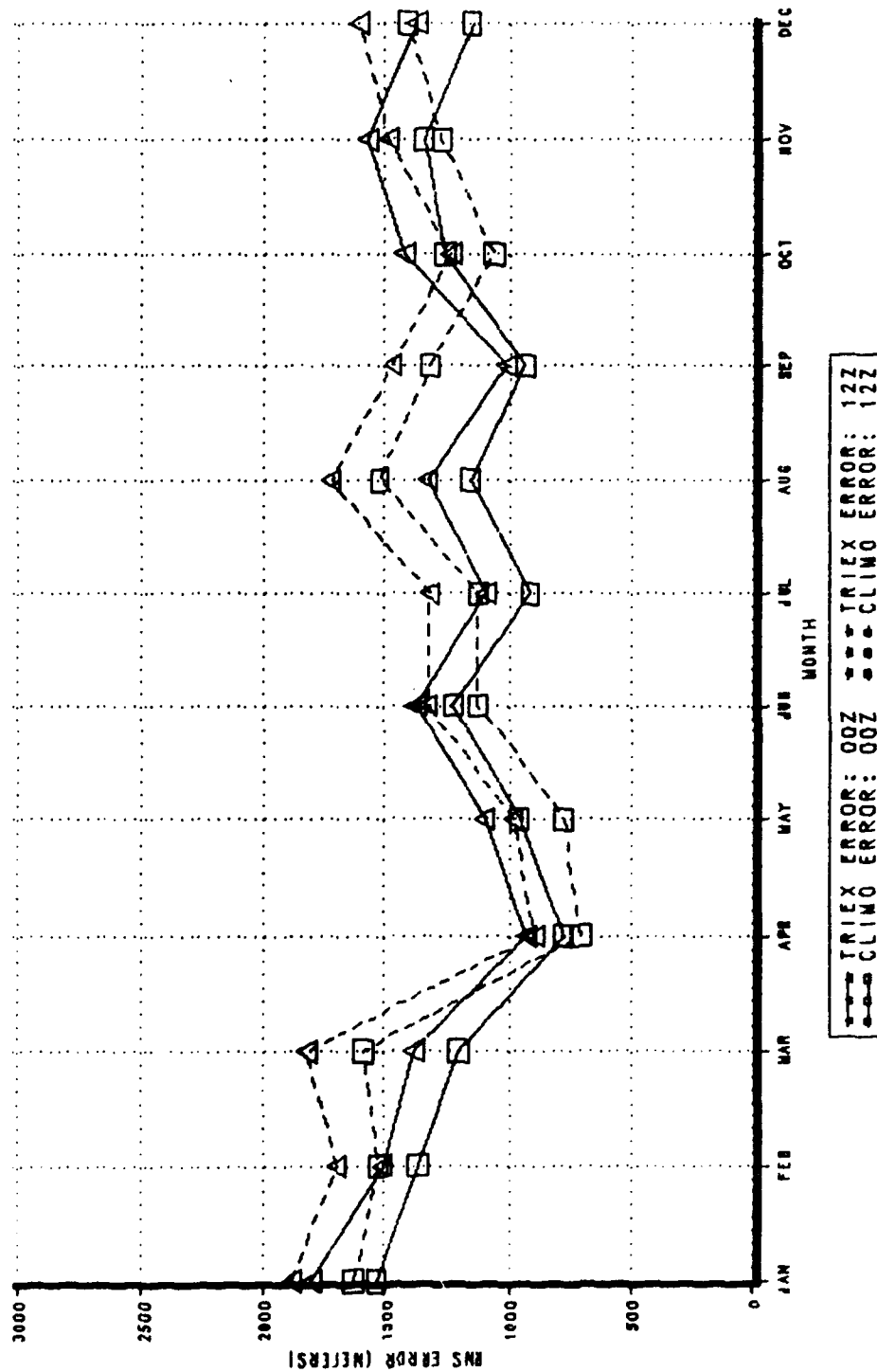


Figure 25-3

ERROR STATISTICS
 Mt Kaala, HI (LIH RAOB Data)
 Range=175 NM Angle=0 DEG

MODEL	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
TRIEXPONENTIAL	747.50	1205.29	-2572.3	6779.2
CLIMATOLOGY	305.46	1192.38	-2958.3	6166.2
STANDARD ATMOSPHERE	1087.80	1196.33	-2173.9	7032.9

Figure 25-4

TRIEXPONENTIAL MODEL ERRORS
Mt Kaala, HI (LIH RAOB Data)
Range=175 NM Angle=0 DEG

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-2500	1	0.0	1	0.0
-2000	2	0.0	3	0.0
-1500	8	0.1	11	0.1
-1000	49	0.6	60	0.8
-500	303	3.8	363	4.6
0	1863	23.6	2226	28.2
500	3284	41.7	5510	69.9
1000	1392	17.7	6902	87.6
1500	412	5.2	7314	92.8
2000	142	1.8	7456	94.6
2500	68	0.9	7524	95.5
3000	32	0.4	7556	95.9
3500	15	0.2	7571	96.1
4000	10	0.1	7581	96.2
4500	9	0.1	7590	96.3
5000	8	0.1	7598	96.4
5500	14	0.2	7612	96.6
6000	176	2.2	7788	98.8
6500	92	1.2	7880	100.0
7000	1	0.0	7881	100.0

CLIMATOLOGY ERRORS

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-3000	1	0.0	1	0.0
-2500	1	0.0	2	0.0
-2000	7	0.1	9	0.1
-1500	49	0.6	58	0.7
-1000	239	3.0	297	3.8
-500	1534	19.5	1831	23.2
0	3336	42.3	5167	65.6
500	1665	21.1	6832	86.7
1000	472	6.0	7304	92.7
1500	154	2.0	7458	94.6
2000	65	0.8	7523	95.5
2500	32	0.4	7555	95.9
3000	15	0.2	7570	96.1
3500	12	0.2	7582	96.2
4000	9	0.1	7591	96.3
4500	7	0.1	7598	96.4
5000	12	0.2	7610	96.6
5500	192	2.4	7802	99.0
6000	79	1.0	7881	100.0

Figure 25-5

HEIGHT ERROR DISTRIBUTION MI Koda, HI (LIH RA08 Data) Range=175 NM Angle=0 DEG

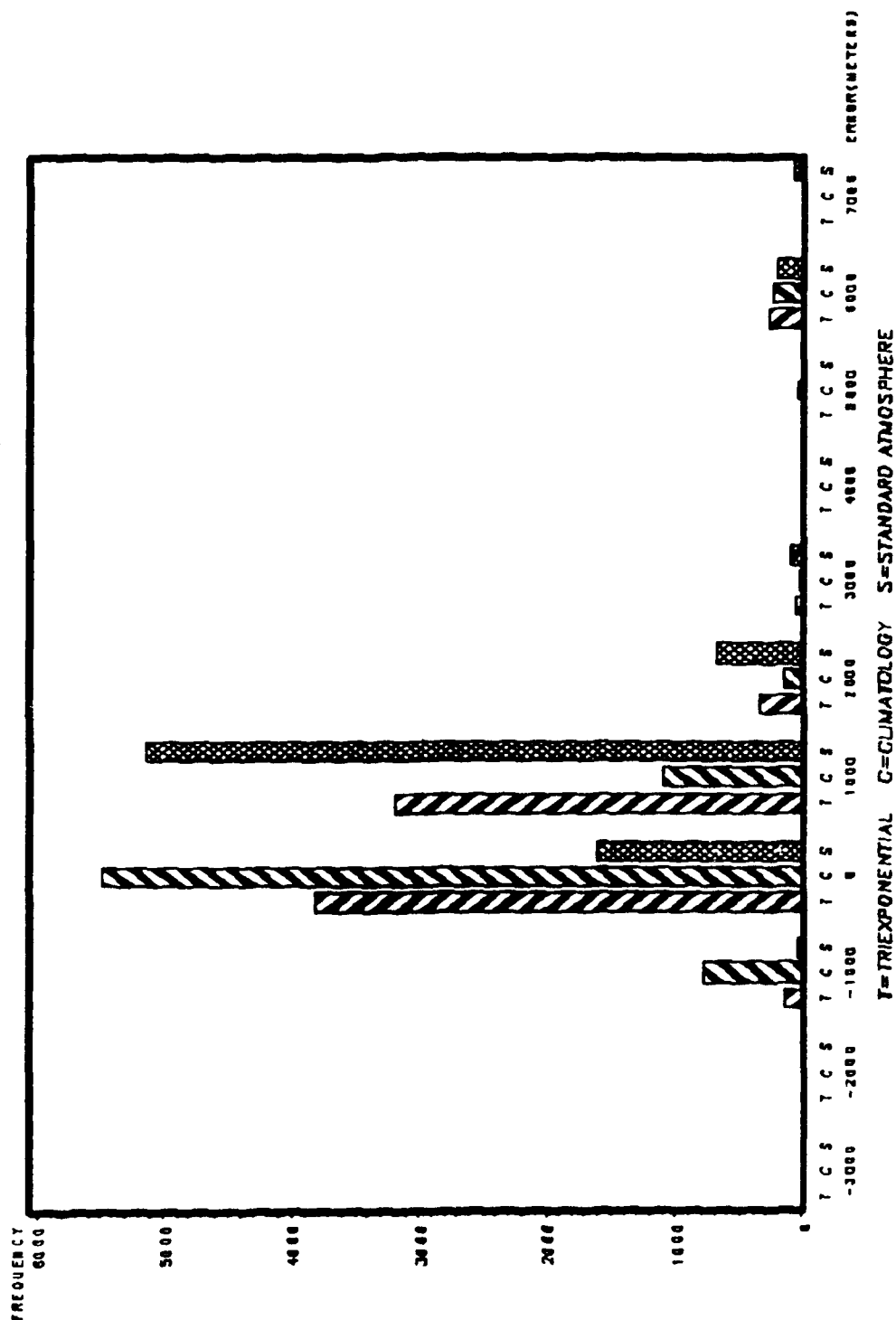


Figure 25-6

TRIEXPONENTIAL MODEL ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												Total
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
-2500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	
-2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.15	
-1500	0.15	0.16	0.15	0.00	0.00	0.00	0.00	0.15	0.61	0.00	0.00	0.00	
-1000	0.30	0.33	1.05	0.62	0.74	0.15	0.15	0.75	1.38	1.04	0.00	0.90	
-500	3.17	5.74	3.16	1.87	3.27	2.46	3.72	3.59	7.06	5.79	3.26	3.15	
0	22.51	30.49	23.61	26.13	21.88	21.35	22.47	21.23	25.31	20.77	28.68	20.12	
500	38.52	36.72	42.11	47.28	47.32	47.16	44.94	41.26	40.64	40.21	32.75	41.14	
1000	17.52	12.13	15.34	17.26	16.22	19.35	19.64	20.63	14.57	19.88	19.38	19.52	
1500	6.50	5.57	5.41	3.58	5.65	3.99	3.72	4.93	4.60	5.64	7.60	5.56	
2000	2.11	1.64	1.65	1.24	2.23	0.92	1.49	1.20	1.53	1.78	2.48	3.30	
2500	1.06	0.98	1.35	0.62	0.89	0.77	0.60	0.45	0.92	0.89	0.78	1.05	
3000	0.76	0.66	0.60	0.16	0.30	0.15	0.15	0.30	0.46	0.30	0.62	0.45	
3500	0.15	0.33	0.00	0.16	0.00	0.00	0.45	0.60	0.00	0.15	0.16	0.30	
4000	0.15	0.16	0.45	0.16	0.00	0.00	0.15	0.00	0.00	0.15	0.16	0.15	
4500	0.45	0.00	0.00	0.16	0.15	0.00	0.00	0.15	0.00	0.00	0.31	0.15	
5000	0.00	0.33	0.15	0.00	0.00	0.15	0.00	0.15	0.00	0.00	0.16	0.30	
5500	0.15	0.00	0.15	0.00	0.00	0.46	0.45	0.45	0.00	0.30	0.00	0.15	
6000	2.11	1.48	2.41	0.47	1.34	2.46	2.08	3.44	2.91	2.23	3.72	2.10	
6500	4.38	3.28	2.26	0.31	0.00	0.61	0.00	0.75	0.00	0.59	0.47	1.50	
7000	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Total	662	610	665	643	672	651	672	669	652	674	645	666	7881

Figure 25-7

CLIMATOLOGY ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												Total
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
-3000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	
-2500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	
-2000	0.30	0.16	0.15	0.00	0.00	0.00	0.00	0.00	0.31	0.15	0.00	0.00	
-1500	0.60	0.49	0.75	0.31	0.45	0.15	0.15	1.20	0.92	0.74	0.47	1.20	
-1000	4.38	4.10	3.46	1.09	1.79	1.84	3.13	2.24	2.76	3.41	4.50	3.75	
-500	27.04	21.31	23.76	13.69	16.22	15.82	21.28	15.99	13.80	15.88	28.84	20.12	
0	36.86	39.02	42.26	53.03	46.13	44.70	45.39	42.90	43.87	40.95	33.49	39.19	
500	14.05	19.18	15.34	23.17	23.51	26.42	20.24	24.36	24.08	25.37	16.28	21.32	
1000	6.19	6.39	5.11	4.98	6.40	5.22	4.76	5.38	7.98	6.53	8.22	4.80	
1500	1.81	1.97	1.80	1.56	2.38	1.38	1.04	1.79	1.84	1.93	2.48	3.45	
2000	0.91	0.82	1.50	0.47	1.34	0.77	0.60	0.45	0.61	1.19	0.16	1.05	
2500	0.45	0.66	0.30	0.47	0.30	0.00	0.30	0.00	0.92	0.30	0.78	0.45	
3000	0.15	0.66	0.00	0.16	0.00	0.00	0.45	0.75	0.00	0.00	0.00	0.15	
3500	0.15	0.16	0.45	0.16	0.00	0.00	0.15	0.00	0.00	0.30	0.16	0.30	
4000	0.45	0.00	0.00	0.16	0.15	0.00	0.00	0.15	0.00	0.00	0.31	0.15	
4500	0.15	0.33	0.15	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.16	0.15	
5000	0.00	0.00	0.15	0.00	0.00	0.15	0.15	0.30	0.00	0.30	0.47	0.30	
5500	6.04	0.82	3.46	0.00	0.60	2.00	2.38	3.74	1.84	2.23	3.57	2.40	
6000	0.45	3.93	1.35	0.78	0.74	1.38	0.00	0.75	1.07	0.59	0.16	1.05	
Total	662	610	665	643	672	651	672	669	652	674	645	666	7881

Figure 25-8

HEIGHT DISTRIBUTION

Mt Keala, HI (LJH RAOB Data) Range = 175 NM Angle = 0 DEG

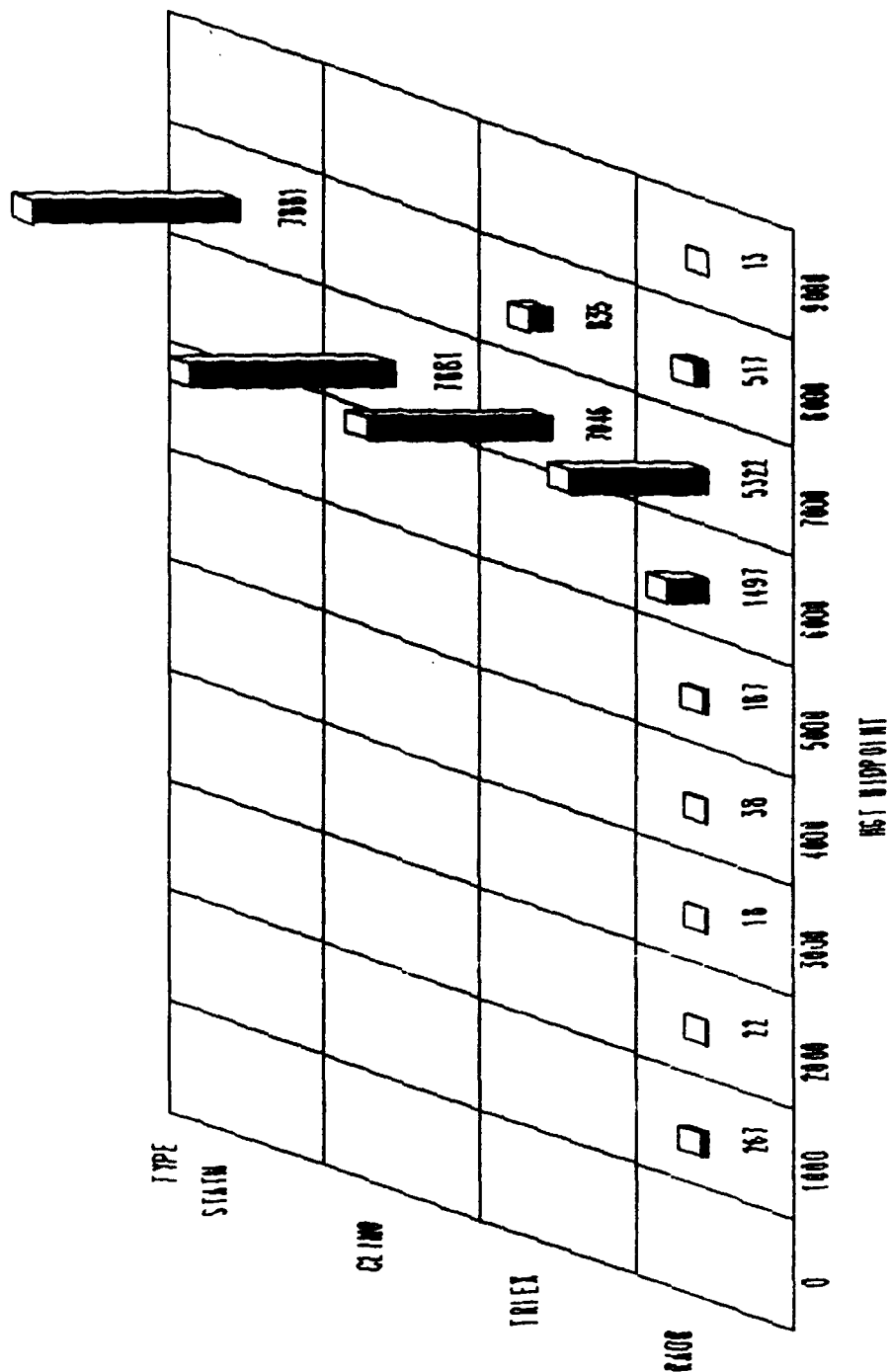


Figure 25-9

RMS ERRORS (meters) FOR
 Sonora ,TX (DRT RAOB Data)
 Range=175 NM Angle=0 DEG

ENTIRE POR

TRIEXPONENTIAL	CLIMATOLOGY	STANDARD ATMOSPHERE
915	952	1011

RMS HEIGHT ERRORS FROM THE TRIEXPONENTIAL MODEL
 BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	1197	1096	1290
FEB	809	578	984
MAR	943	695	1138
APR	1057	494	1401
MAY	1185	590	1567
JUN	628	383	801
JUL	726	445	926
AUG	509	471	545
SEP	576	440	685
OCT	714	521	863
NOV	1097	699	1389
DEC	1151	951	1319

RMS HEIGHT ERRORS FROM CLIMATOLOGY
 BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	1241	1168	1310
FEB	871	676	1026
MAR	1055	843	1230
APR	1102	595	1431
MAY	1192	714	1526
JUN	638	402	806
JUL	709	383	927
AUG	454	324	554
SEP	613	415	760
OCT	776	580	929
NOV	1138	793	1404
DEC	1210	1031	1364

Figure 26-1

MONTHLY RMS HEIGHT ERRORS
 Sonora, TX (DRT RA08 Data) Range=175 NM Angle=0 DEG

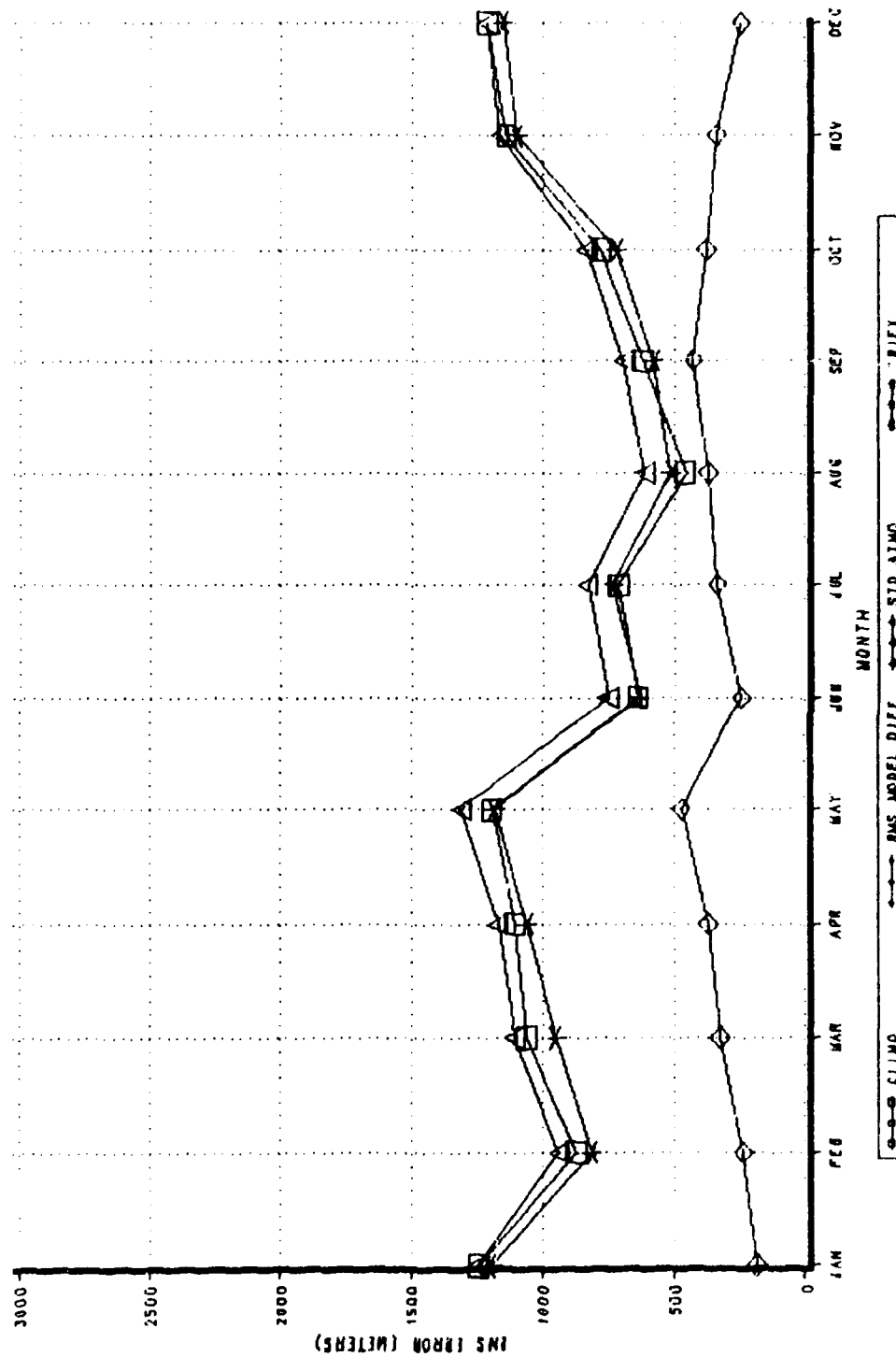


Figure 26-2

MONTHLY RMS HEIGHT ERRORS BY HOUR

Sonora, TX (DRT RA08 Data)
Range=173 NM Angle=0 DEG

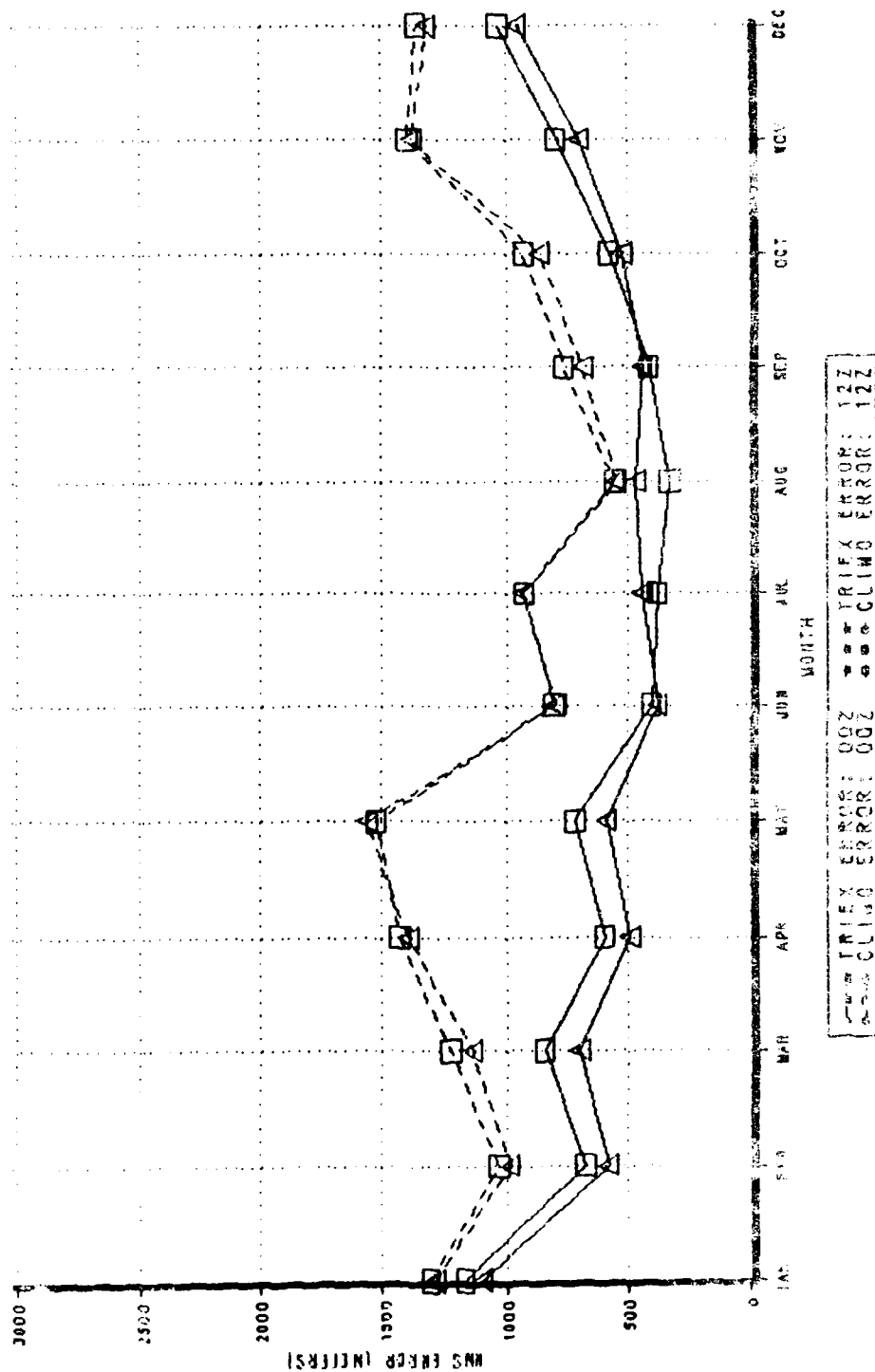


Figure 26-3

ERROR STATISTICS
Sonora ,TX (DRT RAOB Data)
Range=175 NM Angle=0 DEG

MODEL	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
TRIEXPONENTIAL	92.26	910.17	-1933.4	6976.2
CLIMATOLOGY	97.45	947.52	-2474.0	6717.2
STANDARD ATMOSPHERE	-65.33	1009.17	-2415.4	6316.8

Figure 26-4

TRIEXPONENTIAL MODEL ERRORS
Sonora ,TX (DRT RAOB Data)
Range=175 NM Angle=0 DEG

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-2000	4	0.1	4	0.1
-1500	5	0.1	9	0.1
-1000	70	0.9	79	1.0
-500	2252	28.8	2331	29.8
0	3845	49.2	6176	79.0
500	998	12.8	7174	91.7
1000	313	4.0	7487	95.7
1500	99	1.3	7586	97.0
2000	51	0.7	7637	97.6
2500	32	0.4	7669	98.0
3000	10	0.1	7679	98.2
3500	12	0.2	7691	98.3
4000	3	0.0	7694	98.4
4500	4	0.1	7698	98.4
5000	3	0.0	7701	98.5
5500	32	0.4	7733	98.9
6000	57	0.7	7790	99.6
6500	30	0.4	7820	100.0
7000	2	0.0	7822	100.0

CLIMATOLOGY ERRORS

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-2500	2	0.0	2	0.0
-2000	3	0.0	5	0.1
-1500	34	0.4	39	0.5
-1000	320	4.1	359	4.6
-500	2311	29.5	2670	34.1
0	3135	40.1	5805	74.2
500	1224	15.6	7029	89.9
1000	421	5.4	7450	95.2
1500	123	1.6	7573	96.8
2000	63	0.8	7636	97.6
2500	33	0.4	7669	98.0
3000	10	0.1	7679	98.2
3500	12	0.2	7691	98.3
4000	4	0.1	7695	98.4
4500	3	0.0	7698	98.4
5000	8	0.1	7706	98.5
5500	30	0.4	7736	98.9
6000	40	0.5	7776	99.4
6500	46	0.6	7822	100.0

Figure 26-5

HEIGHT ERROR DISTRIBUTION Sonora .TX (ORT RAOB Data) Range=175 NM Angle=0 DEG

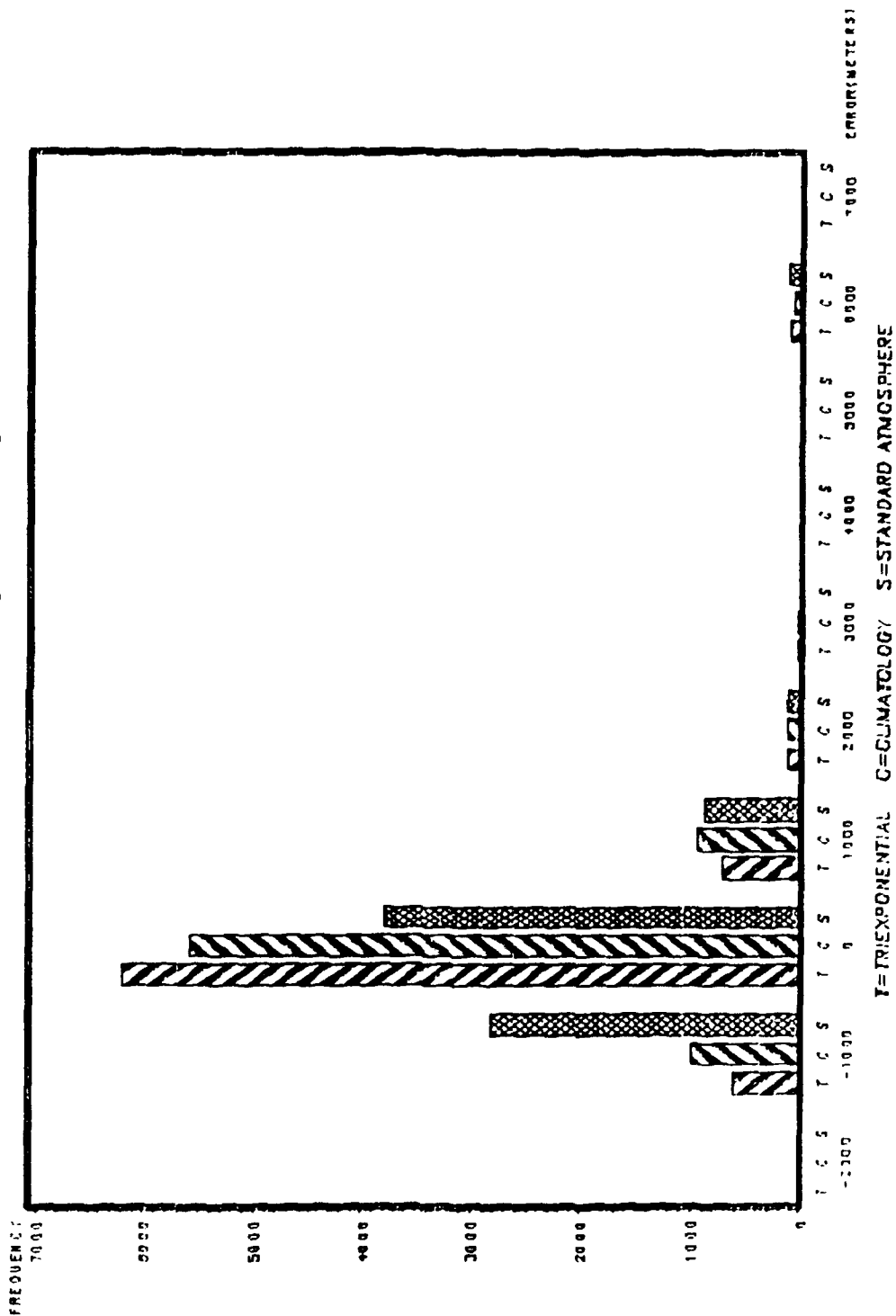


Figure 26-6

TRIEXPONENTIAL MODEL ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
-2000	0.00	0.00	0.15	0.00	0.00	0.00	0.30	0.00	0.00	0.15	0.00	0.00	
-1500	0.00	0.17	0.00	0.16	0.15	0.16	0.00	0.15	0.00	0.00	0.00	0.00	
-1000	0.46	0.17	0.45	0.78	0.75	1.25	0.89	0.74	2.16	1.49	0.80	0.75	
-500	13.34	13.31	18.77	22.50	30.62	33.54	47.10	50.89	49.00	36.12	15.31	12.54	
0	63.65	64.39	58.41	52.50	43.29	42.12	36.40	34.08	35.39	44.78	54.86	61.79	
500	12.42	13.81	11.71	13.44	14.18	15.76	10.85	10.57	9.74	10.30	15.79	14.93	
1000	3.83	4.33	5.11	4.38	4.37	4.84	2.38	2.83	2.16	3.13	7.50	3.43	
1500	1.38	1.00	1.65	1.88	2.11	1.09	0.30	0.30	0.62	1.94	1.59	1.34	
2000	1.07	1.00	0.90	0.63	0.15	0.47	0.59	0.15	0.31	0.60	0.96	1.04	
2500	0.46	0.17	0.45	1.25	0.00	0.31	0.15	0.00	0.15	0.45	0.64	0.90	
3000	0.15	0.17	0.15	0.31	0.45	0.00	0.00	0.15	0.00	0.00	0.00	0.15	
3500	0.15	0.33	0.45	0.00	0.30	0.00	0.00	0.00	0.15	0.30	0.00	0.15	
4000	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.15	
4500	0.00	0.00	0.00	0.00	0.30	0.00	0.15	0.00	0.00	0.00	0.00	0.15	
5000	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.16	0.15	
5500	0.15	0.17	0.60	0.31	2.11	0.16	0.45	0.00	0.31	0.30	0.32	0.00	
6000	1.07	0.67	0.90	1.41	0.90	0.31	0.45	0.15	0.00	0.15	1.28	1.49	
6500	1.69	0.33	0.15	0.31	0.15	0.00	0.00	0.00	0.00	0.15	0.80	1.04	
7000	0.15	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Total	652	601	666	640	663	641	673	672	647	670	627	670	7822

Figure 26-7

CLIMATOLOGY ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												Total
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
-2500	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	
-2000	0.00	0.00	0.00	0.16	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
-1500	0.00	0.00	0.30	0.78	1.81	0.31	0.30	0.00	0.93	0.30	0.48	0.00	
-1000	0.92	1.00	2.25	8.28	11.31	2.50	0.89	1.19	6.96	7.61	4.94	1.19	
-500	27.76	34.78	32.88	37.19	33.03	28.08	20.51	20.24	21.64	20.15	38.44	41.04	
0	48.01	39.43	36.19	25.78	30.77	40.41	52.15	57.89	47.91	42.39	26.32	32.39	
500	11.96	14.98	12.76	15.63	11.92	20.44	19.32	14.73	16.38	20.45	15.79	13.43	
1000	4.91	5.49	8.56	6.25	4.37	6.08	4.01	4.76	4.33	4.18	7.18	4.63	
1500	1.53	1.66	2.55	1.41	1.51	1.09	0.89	0.89	0.93	2.24	2.55	1.64	
2000	0.92	0.83	1.35	1.09	0.60	0.31	0.74	0.00	0.00	0.90	1.44	1.49	
2500	0.61	0.17	0.60	0.94	0.45	0.31	0.15	0.00	0.46	0.60	0.16	0.60	
3000	0.15	0.17	0.00	0.31	0.30	0.00	0.00	0.00	0.00	0.00	0.16	0.45	
3500	0.15	0.33	0.60	0.00	0.15	0.00	0.00	0.15	0.15	0.15	0.00	0.15	
4000	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.30	0.00	0.15	
4500	0.00	0.00	0.00	0.00	0.15	0.00	0.15	0.00	0.00	0.00	0.00	0.15	
5000	0.00	0.00	0.15	0.00	0.60	0.00	0.00	0.00	0.00	0.15	0.16	0.15	
5500	0.15	0.17	0.15	0.31	2.26	0.47	0.59	0.00	0.31	0.00	0.16	0.00	
6000	0.15	0.00	1.05	1.72	0.15	0.00	0.30	0.15	0.00	0.30	2.07	0.30	
6500	2.76	1.00	0.45	0.16	0.15	0.00	0.00	0.00	0.00	0.15	0.16	2.24	
Total	652	601	666	640	663	641	673	672	647	670	627	670	7822

Figure 26-8

HEIGHT DISTRIBUTION

Sonora, TX (DHT RAOB Data) Range=175 NM Angle=0 DEG

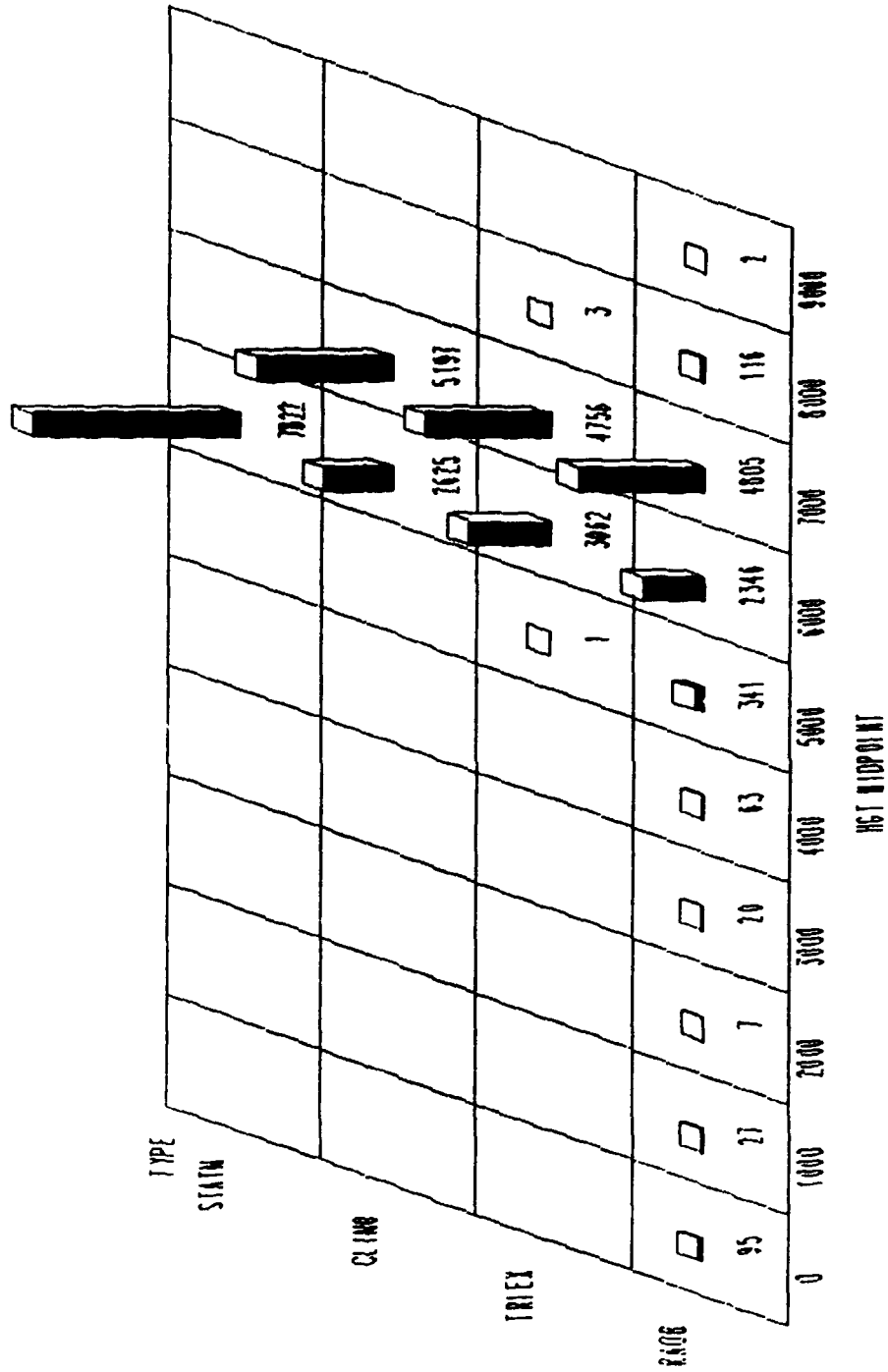


Figure 26-9

RMS ERRORS (meters) FOR
 Whitehouse, FL (AYS RAOB Data)
 Range=175 NM Angle=0 DEG

ENTIRE POR

TRIEXPONENTIAL	CLIMATOLOGY	STANDARD ATMOSPHERE
2074	2145	2091

RMS HEIGHT ERRORS FROM THE TRIEXPONENTIAL MODEL
 BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	2070	2301	1810
FEB	2175	2143	2208
MAR	2285	2013	2534
APR	2343	1980	2651
MAY	2097	1985	2205
JUN	1893	1912	1873
JUL	1766	1971	1532
AUG	1728	1939	1491
SEP	1831	1951	1705
OCT	2012	2222	1777
NOV	2213	2283	2140
DEC	2349	2467	2225

RMS HEIGHT ERRORS FROM CLIMATOLOGY
 BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	2038	2300	1737
FEB	2100	2042	2158
MAR	2315	2032	2572
APR	2338	2117	2535
MAY	2246	2171	2318
JUN	2032	2080	1983
JUL	1950	2244	1599
AUG	1823	212	1461
SEP	2067	2276	1838
OCT	2095	2283	1889
NOV	2309	2282	2335
DEC	2358	2440	2272

Figure 27-1

MONTHLY RMS HEIGHT ERRORS
 Whitehouse, FL (AYS RAOB Data) Range=175 NM Angle=0 DEG

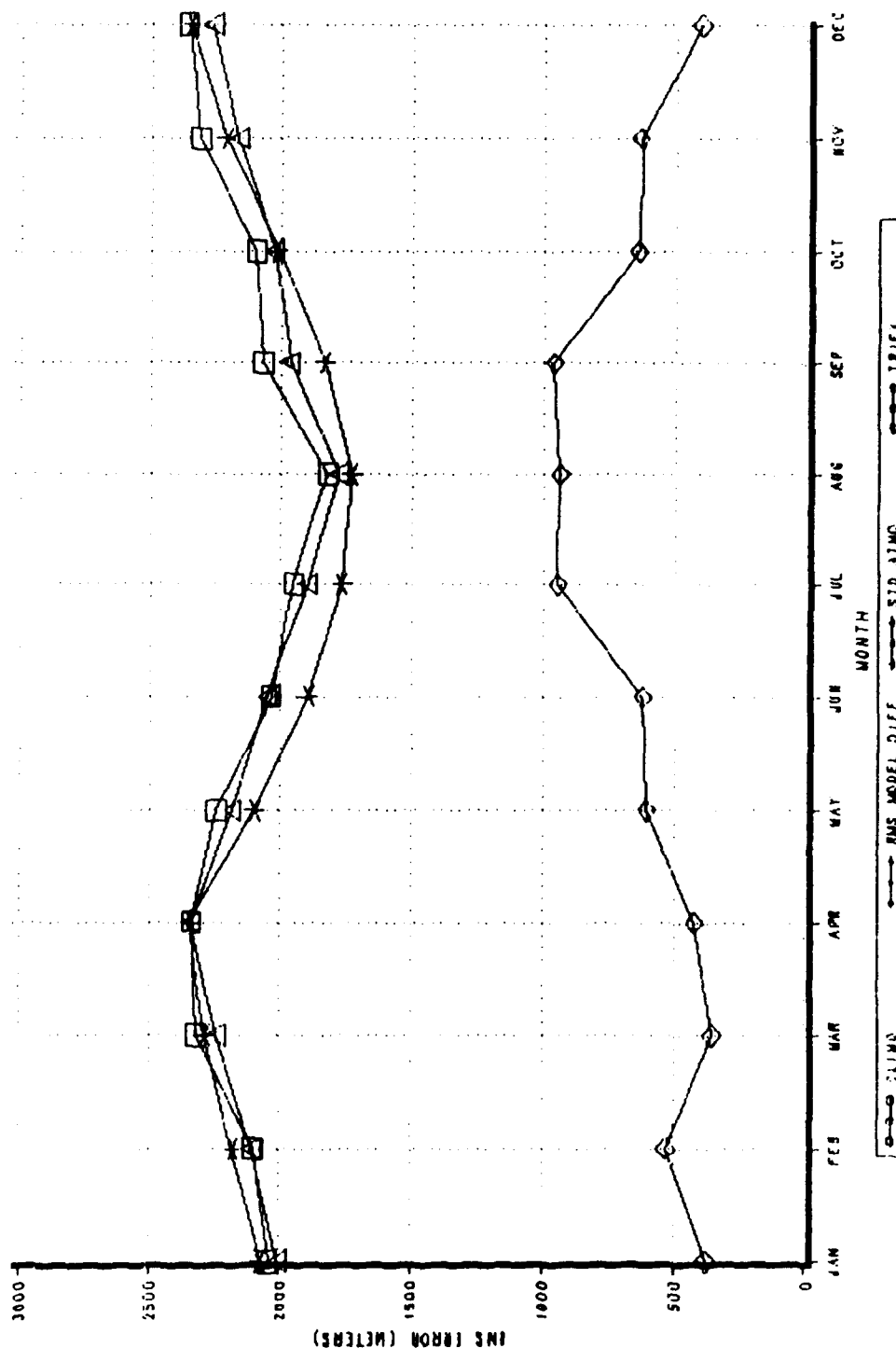
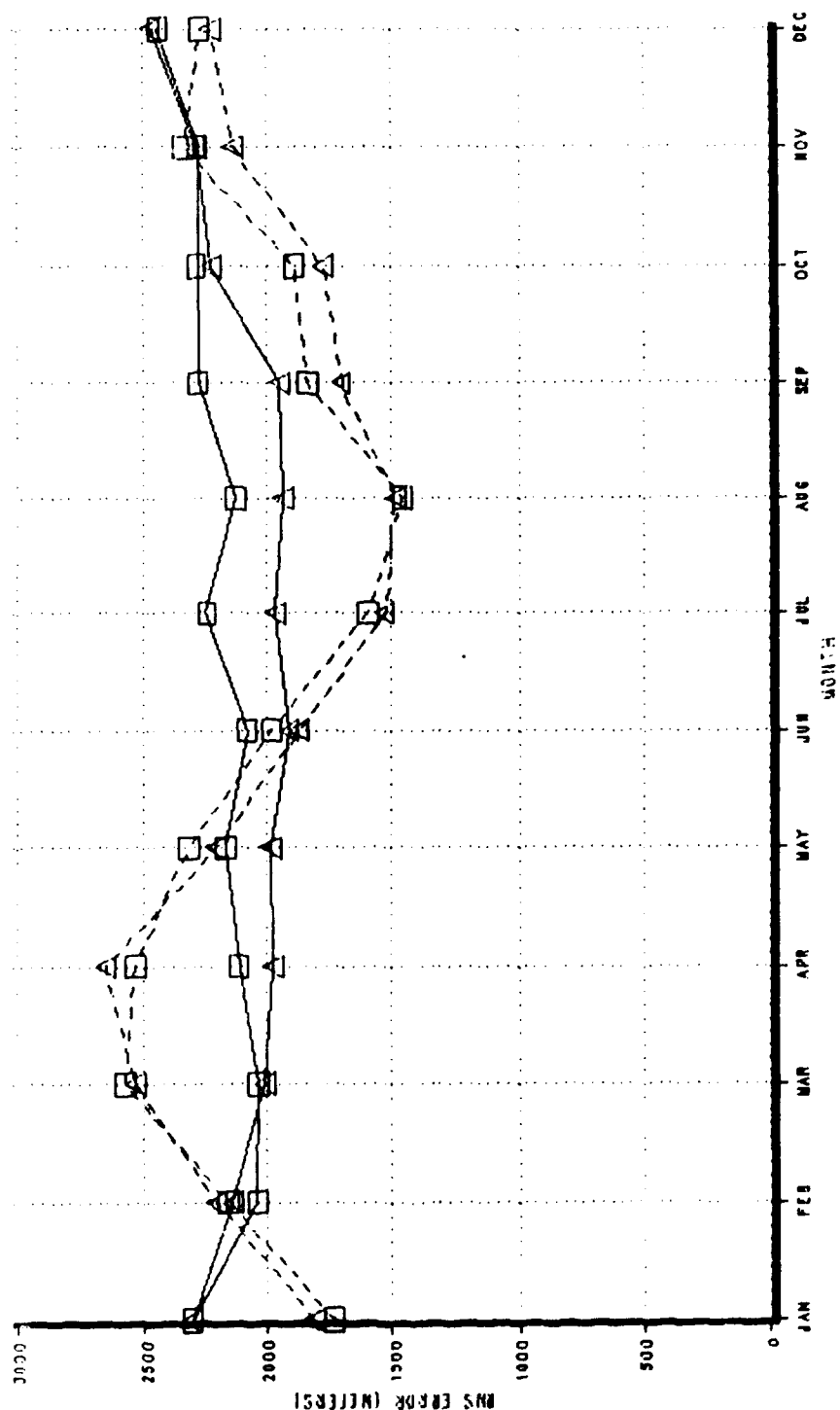


Figure 27-2

MONTHLY RMS HEIGHT ERRORS E HOUP

Whitehouse, FL (15-57-00N 081-50-00W)
 Range = 175 NM Azimuth = 0 DEG



Triex Error: 00Z Triex Error: 12Z
 Climo Error: 00Z Climo Error: 12Z

Figure 27-3

ERROR STATISTICS
 Whitehouse, FL (AYS RAOB Data)
 Range=175 NM Angle=0 DEG

MODEL	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
TRIEXPONENTIAL	332.18	2047.22	-3298.1	6632.0
CLIMATOLOGY	707.17	2025.35	-4187.0	6598.8
STANDARD ATMOSPHERE	544.40	2018.83	-3971.4	5962.1

Figure 27-4

TRIEXPONENTIAL MODEL ERRORS
 Whitehouse, FL (AYS RAOB Data)
 Range=175 NM Angle=0 DEG

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-3500	1	0.0	1	0.0
-3000	18	0.2	19	0.2
-2500	62	0.8	81	1.0
-2000	189	2.4	270	3.5
-1500	520	6.7	790	10.1
-1000	1298	16.6	2088	26.7
-500	1920	24.6	4008	51.3
0	1527	19.5	5535	70.8
500	732	9.4	6267	80.2
1000	342	4.4	6609	84.5
1500	170	2.2	6779	86.7
2000	97	1.2	6876	88.0
2500	50	0.6	6926	88.6
3000	36	0.5	6962	89.1
3500	35	0.4	6997	89.5
4000	20	0.3	7017	89.8
4500	30	0.4	7047	90.1
5000	144	1.8	7191	92.0
5500	153	2.0	7344	93.9
6000	312	4.0	7656	97.9
6500	161	2.1	7817	100.0

CLIMATOLOGY ERRORS

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-4000	3	0.0	3	0.0
-3500	6	0.1	9	0.1
-3000	10	0.1	19	0.2
-2500	16	0.2	35	0.4
-2000	47	0.6	82	1.0
-1500	195	2.5	277	3.5
-1000	712	9.1	989	12.7
-500	1647	21.1	2636	33.7
0	1822	23.3	4458	57.0
500	1250	16.0	5708	73.0
1000	614	7.9	6322	80.9
1500	310	4.0	6632	84.8
2000	155	2.0	6787	86.8
2500	96	1.2	6883	88.1
3000	56	0.7	6939	88.8
3500	35	0.4	6974	89.2
4000	32	0.4	7006	89.6
4500	14	0.2	7020	89.8
5000	14	0.2	7034	90.0
5500	111	1.4	7145	91.4
6000	496	6.3	7641	97.7
6500	176	2.3	7817	100.0

Figure 27-5

HEIGHT ERROR DISTRIBUTION Whitehouse, FL (AVS RAOB Data) Range=175 NM Angle=0 DEG

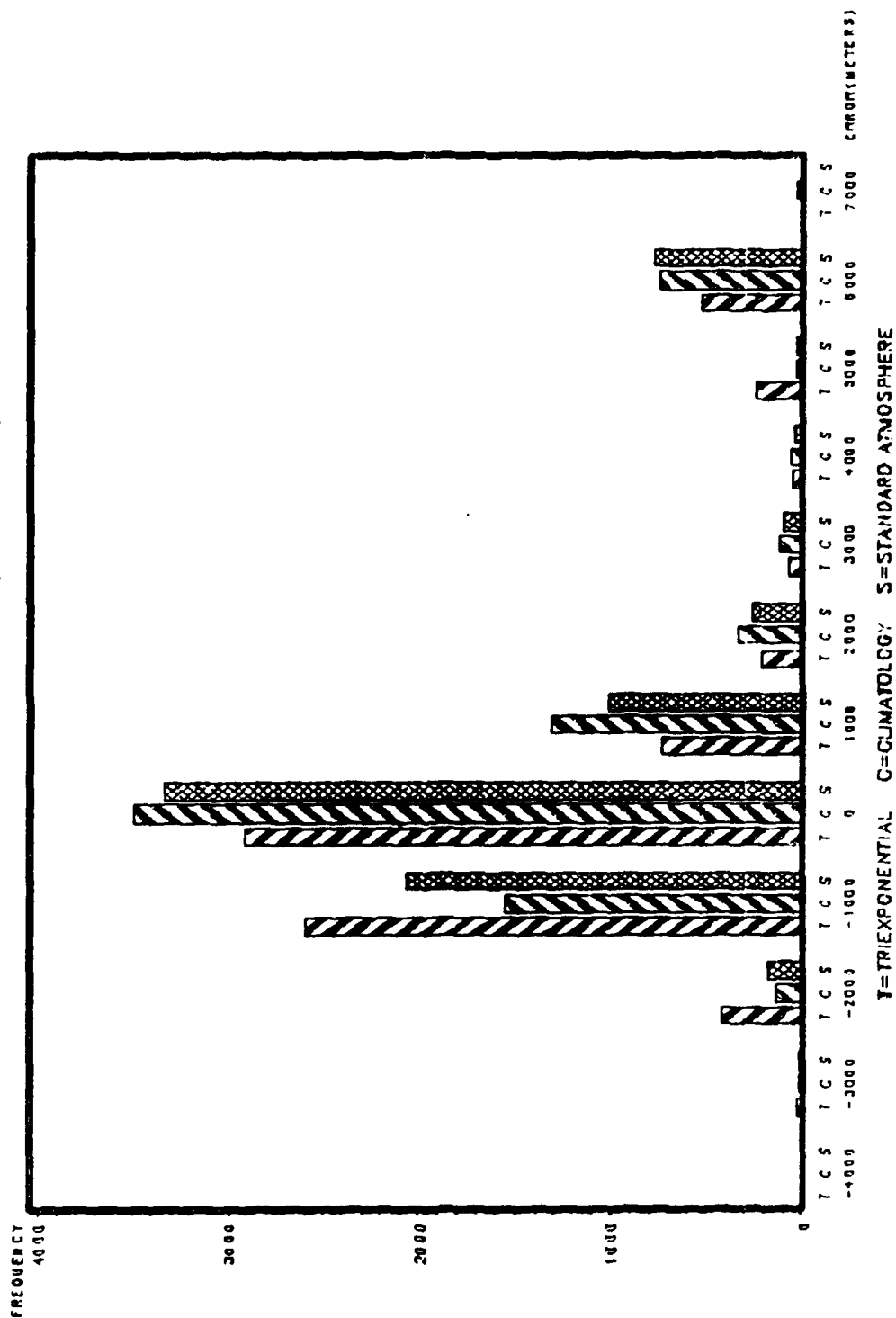


Figure 27-6

TRIEXPONENTIAL MODEL ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												Total
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
-3500	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
-3000	0.00	0.16	0.00	0.00	0.15	0.16	0.61	0.76	0.79	0.15	0.00	0.00	
-2500	0.44	0.16	0.00	0.00	0.89	0.47	2.28	3.33	1.42	0.15	0.00	0.31	
-2000	0.15	0.00	0.15	0.15	1.49	3.44	7.76	8.33	4.56	1.35	1.43	0.15	
-1500	1.48	0.65	1.95	2.94	8.77	11.72	13.85	10.91	14.15	4.96	4.77	3.66	
-1000	7.83	6.86	10.21	13.14	19.32	23.28	22.68	29.70	22.33	17.29	14.79	11.60	
-500	19.20	25.98	28.08	29.68	27.79	23.91	23.59	20.76	20.91	26.77	24.64	23.51	
0	34.27	30.23	25.38	18.55	16.05	14.84	9.59	9.70	12.74	20.30	18.28	21.43	
500	14.33	14.54	11.71	10.97	5.94	6.41	5.94	3.64	7.55	8.12	10.65	12.82	
1000	6.79	4.74	4.50	5.41	3.71	2.34	3.35	3.33	2.52	4.21	6.52	5.04	
1500	2.36	2.45	1.80	1.55	2.38	1.88	1.37	1.21	2.52	3.76	3.02	1.83	
2000	1.33	1.47	1.35	2.01	0.74	0.78	0.91	0.91	1.10	0.75	1.59	1.98	
2500	0.89	0.98	1.05	0.31	0.45	0.31	0.15	0.61	0.47	0.75	1.27	0.46	
3000	0.44	0.33	0.45	0.62	0.89	0.47	0.30	0.15	0.31	0.75	0.32	0.46	
3500	0.30	0.16	0.30	1.08	0.15	0.16	0.15	0.61	0.47	0.45	0.95	0.61	
4000	0.30	0.00	0.15	0.00	0.59	0.31	0.15	0.00	0.16	0.45	0.64	0.31	
4500	0.30	0.16	0.30	0.00	0.00	0.94	0.76	0.45	0.63	0.45	0.32	0.31	
5000	0.15	0.16	0.45	0.15	0.89	4.69	5.33	4.09	4.40	1.05	0.64	0.15	
5500	0.59	0.49	2.25	2.63	4.90	3.13	1.07	1.52	2.52	2.26	1.59	0.46	
6000	3.99	6.21	5.86	8.35	4.46	0.78	0.15	0.00	0.47	5.56	5.72	6.41	
6500	4.87	4.25	4.05	2.32	0.45	0.00	0.00	0.00	0.00	0.45	2.86	5.50	
Total	677	612	666	647	673	640	657	660	636	665	629	655	7817

Figure 27-7

CLIMATOLOGY ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												Total
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
-4000	0.00	0.16	0.00	0.15	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	
-3500	0.15	0.16	0.00	0.00	0.30	0.00	0.00	0.00	0.16	0.15	0.00	0.00	
-3000	0.15	0.00	0.00	0.00	0.45	0.31	0.00	0.15	0.16	0.00	0.00	0.31	
-2500	0.15	0.00	0.15	0.00	0.30	0.31	0.76	0.30	0.47	0.00	0.00	0.00	
-2000	0.74	0.16	0.30	0.00	0.59	0.47	1.52	1.82	0.31	0.30	0.32	0.61	
-1500	2.36	5.39	0.75	2.63	2.08	4.38	3.20	5.61	1.10	1.20	1.11	0.31	
-1000	10.78	19.44	7.51	8.96	7.88	11.56	9.13	7.42	10.38	5.86	5.56	5.50	
-500	30.72	29.25	25.08	27.05	18.72	20.94	15.37	14.09	14.78	16.09	16.22	24.58	
0	25.85	17.48	27.03	22.87	26.15	22.19	20.55	24.24	20.75	26.62	20.67	24.43	
500	10.04	9.80	13.96	12.36	15.90	14.84	19.79	19.85	20.28	19.40	19.08	16.49	
1000	4.43	3.76	6.01	6.80	6.84	7.34	9.44	10.45	10.22	10.08	11.45	7.48	
1500	2.22	1.47	2.55	2.16	4.31	3.75	6.24	3.33	5.50	5.41	7.15	3.51	
2000	1.03	0.65	1.95	1.24	2.38	1.72	3.20	2.88	3.30	1.35	2.86	1.22	
2500	0.44	0.65	1.05	0.62	1.19	1.41	1.83	1.52	1.89	1.50	1.59	1.07	
3000	0.59	0.33	0.45	0.77	0.59	0.31	0.46	0.91	1.42	1.20	1.11	0.46	
3500	0.44	0.00	0.15	0.31	0.89	0.00	0.46	0.30	0.31	0.75	0.79	0.92	
4000	0.15	0.16	0.30	0.62	0.30	0.63	0.46	0.30	0.31	0.30	0.95	0.46	
4500	0.30	0.16	0.15	0.00	0.30	0.16	0.15	0.45	0.16	0.15	0.16	0.00	
5000	0.00	0.16	0.15	0.00	0.15	0.31	0.00	0.15	0.47	0.30	0.16	0.31	
5500	0.15	5.39	0.45	8.96	0.15	0.31	0.46	0.61	0.16	0.45	0.16	0.15	
6000	9.31	5.39	12.01	0.00	5.79	9.06	7.00	5.45	1.30	6.02	5.88	6.56	
6500	0.00	0.00	0.00	4.48	4.75	0.00	0.00	0.00	4.56	2.86	4.77	5.65	
Total	677	612	666	647	673	640	657	660	636	665	629	655	7817

Figure 27-8

HEIGHT DISTRIBUTION

Whitehouse, FL (AYS RAOB Data) Range = 175 NM Angle = 0 DEG

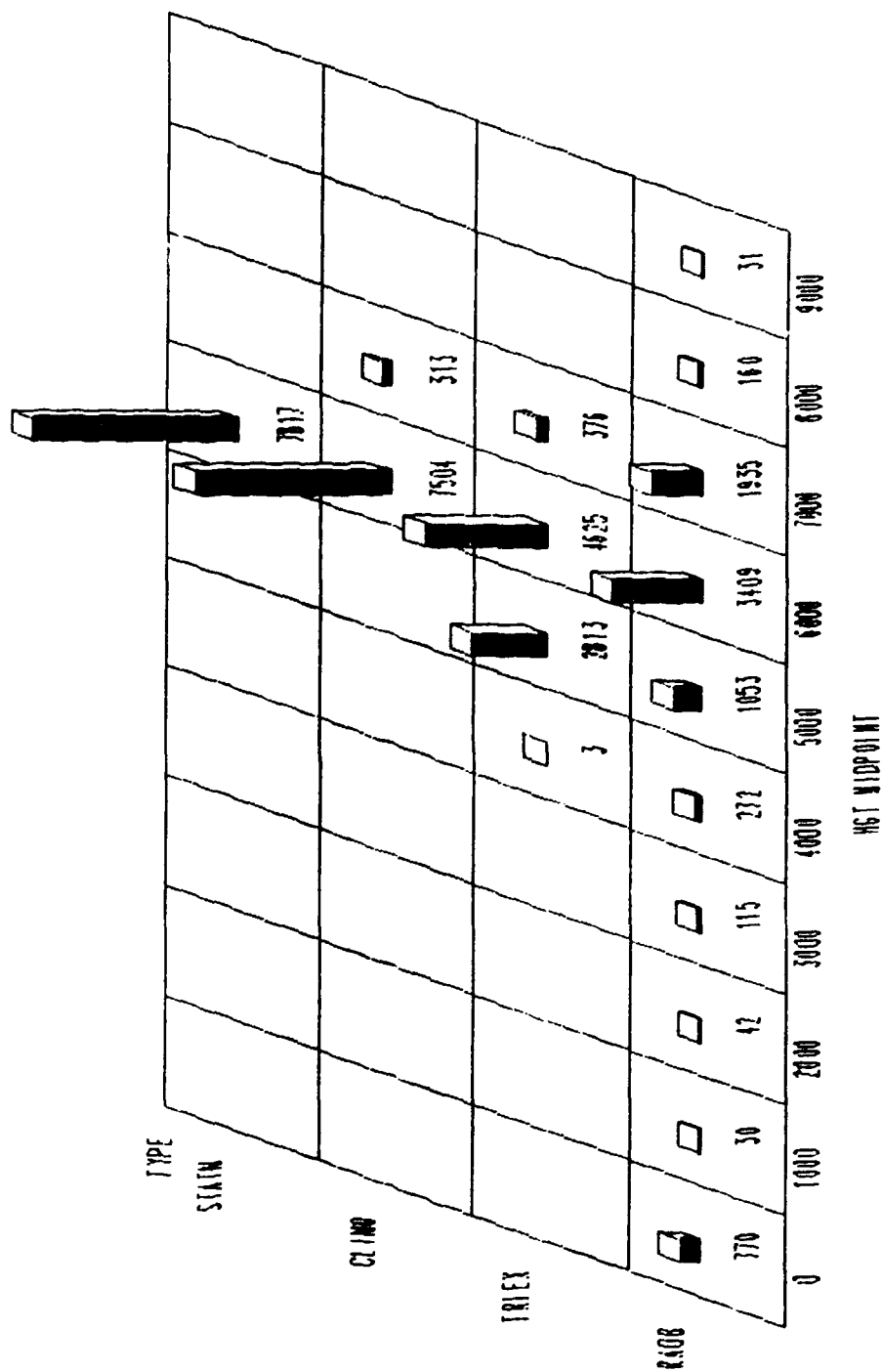


Figure 27-9

RMS ERRORS (meters) FOR
Riverhead, NY (ACY RAOB Data)
Range=175 NM Angle=0 DEG

ENTIRE POR

TRIEXPONENTIAL	CLIMATOLOGY	STANDARD ATMOSPHERE
1543	1555	1631

RMS HEIGHT ERRORS FROM THE TRIEXPONENTIAL MODEL
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	556	513	596
FEB	700	620	774
MAR	1097	864	1285
APR	1557	1303	1781
MAY	2085	1907	2249
JUN	2084	1753	2372
JUL	1927	1646	2179
AUG	1758	1547	1946
SEP	1820	1743	1892
OCT	1694	1479	1893
NOV	1341	1271	1406
DEC	806	987	564

RMS HEIGHT ERRORS FROM CLIMATOLOGY
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	559	527	590
FEB	694	630	756
MAR	1106	882	1288
APR	1536	1312	1737
MAY	2084	1923	2234
JUN	1992	1815	2156
JUL	1913	1730	2085
AUG	1857	1698	2002
SEP	1883	1791	1969
OCT	1742	1576	1901
NOV	1360	1304	1414
DEC	849	1048	578

Figure 28-1

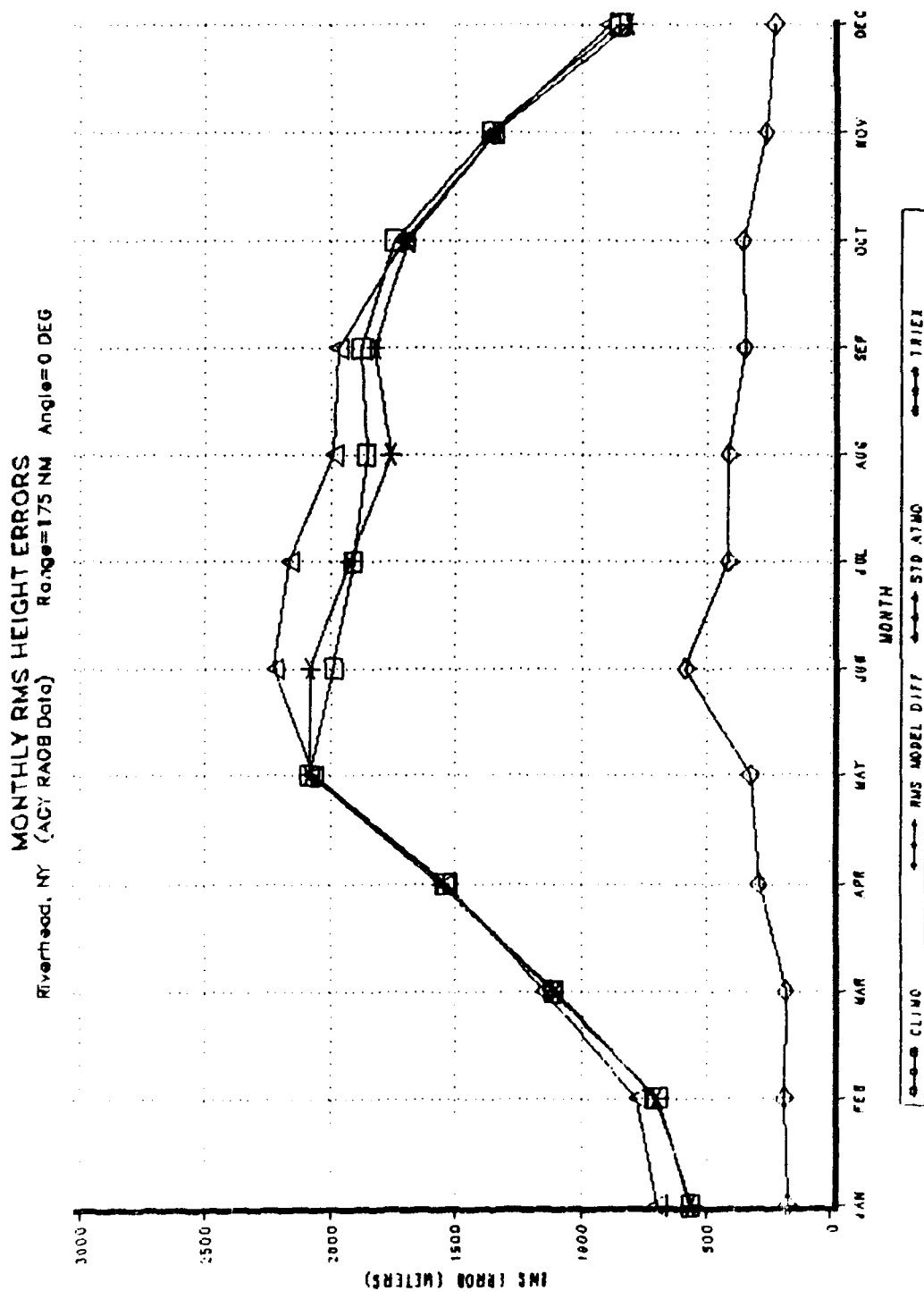


Figure 28-2

MONTHLY RMS HEIGHT ERRORS BY HOUR

Riverhead, NY (ACY RAOB Data)
Range=175 NM Angle=0 DEG

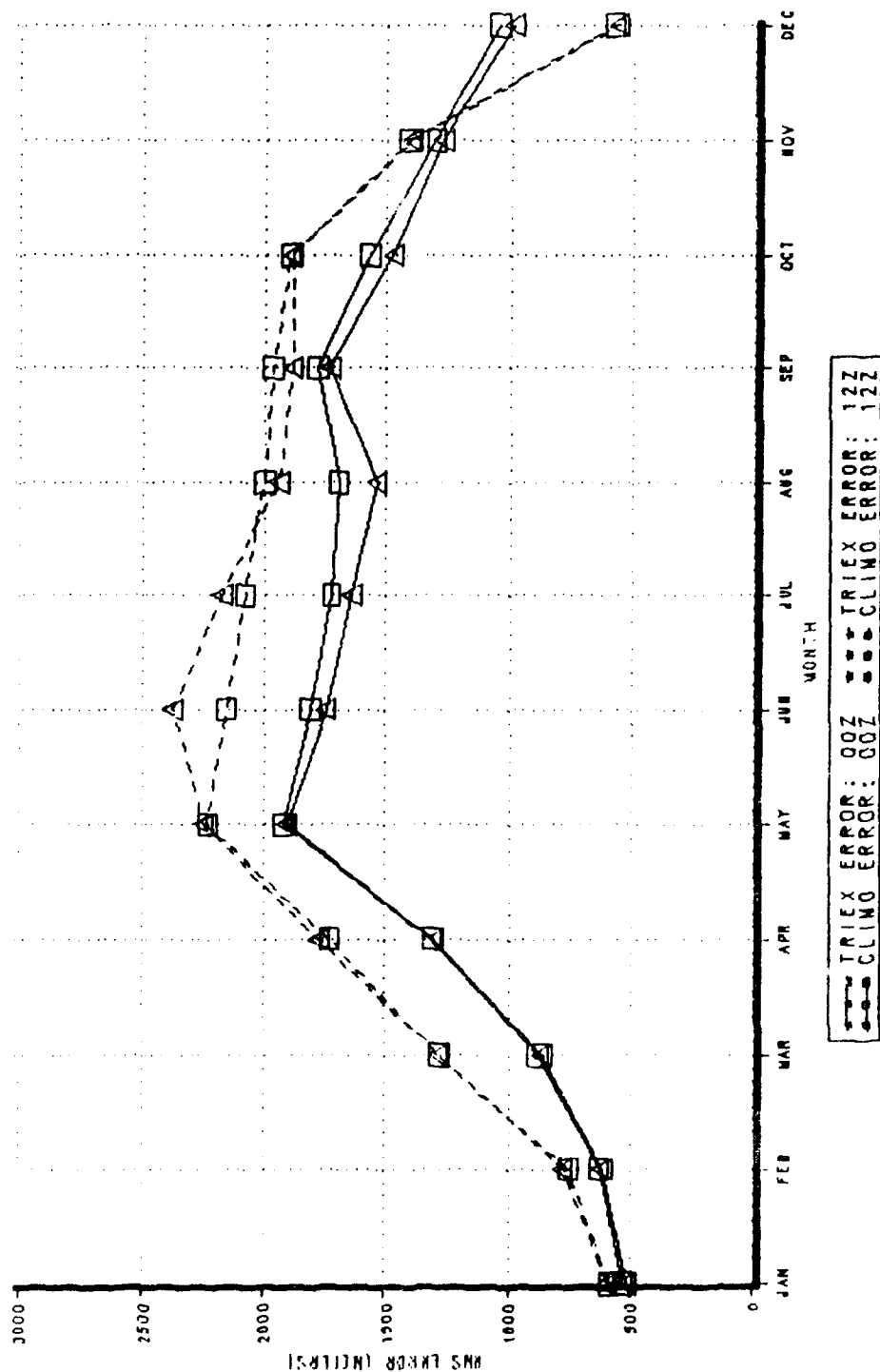


Figure 28-3

ERROR STATISTICS
 Riverhead, NY (ACY RAOB Data)
 Range=175 NM Angle=0 DEG

MODEL	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
TRIEXPONENTIAL	349.55	1502.90	-3465.1	6677.4
CLIMATOLOGY	329.39	1519.75	-3571.9	6537.1
STANDARD ATMOSPHERE	308.44	1601.97	-3333.3	6031.9

Figure 28-4

TRIEXPONENTIAL MODEL ERRORS
Riverhead, NY (ACY RAOB Data)
Range=175 NM Angle=0 DEG

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-3500	1	0.0	1	0.0
-2500	1	0.0	2	0.0
-2000	4	0.1	6	0.1
-1500	10	0.2	16	0.3
-1000	210	4.2	226	4.5
-500	1418	28.2	1644	32.7
0	2010	40.0	3654	72.7
500	629	12.5	4283	85.2
1000	225	4.5	4508	89.7
1500	104	2.1	4612	91.7
2000	55	1.1	4667	92.8
2500	30	0.6	4697	93.4
3000	8	0.2	4705	93.6
3500	8	0.2	4713	93.8
4000	8	0.2	4721	93.9
4500	8	0.2	4729	94.1
5000	39	0.8	4768	94.8
5500	98	1.9	4866	96.8
6000	122	2.4	4988	99.2
6500	39	0.8	5027	100.0

CLIMATOLOGY ERRORS

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-3500	1	0.0	1	0.0
-2500	2	0.0	3	0.1
-2000	11	0.2	14	0.3
-1500	57	1.1	71	1.4
-1000	284	5.6	355	7.1
-500	1410	28.0	1765	35.1
0	1817	36.1	3582	71.3
500	692	13.8	4274	85.0
1000	241	4.8	4515	89.8
1500	94	1.9	4609	91.7
2000	57	1.1	4666	92.8
2500	26	0.5	4692	93.3
3000	14	0.3	4706	93.6
3500	8	0.2	4714	93.8
4000	6	0.1	4720	93.9
4500	5	0.1	4725	94.0
5000	60	1.2	4785	95.2
5500	89	1.8	4874	97.0
6000	130	2.6	5004	99.5
6500	23	0.5	5027	100.0

Figure 28-5

HEIGHT ERROR DISTRIBUTION Riverhead, NY (ACY RA08 Data) Range=175 NM Angle=0 DEG

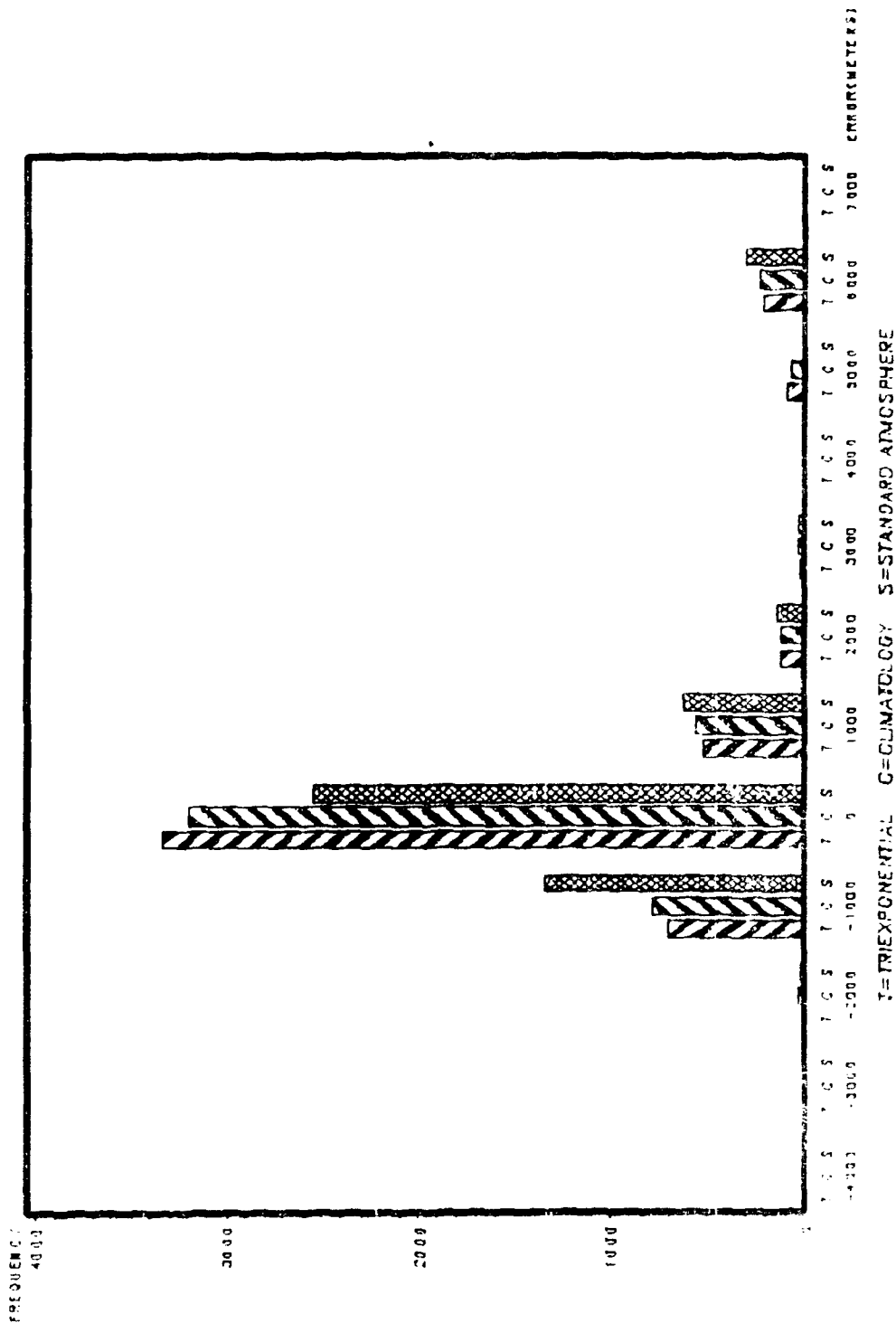


Figure 28-6

TRIEXPONENTIAL MODEL ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												Total
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
-3500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	
-2500	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
-2000	0.00	0.00	0.00	0.00	0.47	0.00	0.00	0.24	0.00	0.22	0.00	0.00	
-1500	0.00	0.00	0.00	0.00	0.24	0.75	0.98	0.47	0.00	0.00	0.00	0.00	
-1000	0.95	1.60	2.43	2.72	6.40	6.50	10.24	10.66	3.40	2.37	1.35	1.80	
-500	16.43	22.99	28.95	30.20	31.75	30.00	30.24	31.75	32.04	31.25	28.38	24.10	
0	65.24	54.42	50.36	37.62	28.91	25.50	24.15	26.54	30.34	34.27	45.72	54.95	
500	12.62	14.30	10.95	14.11	11.37	11.50	9.76	11.61	14.32	15.52	12.16	13.51	
1000	3.81	5.55	2.43	4.70	4.27	6.75	6.83	4.98	3.88	4.74	4.05	2.93	
1500	0.24	0.80	1.46	2.97	2.84	3.25	2.44	1.90	3.64	2.16	2.25	0.90	
2000	0.24	0.53	0.49	1.49	1.42	1.50	2.68	1.18	1.70	1.08	0.68	0.23	
2500	0.00	0.00	0.00	0.25	1.18	1.25	1.71	0.71	0.49	0.43	0.90	0.23	
3000	0.00	0.00	0.24	0.25	0.00	0.50	0.24	0.47	0.00	0.22	0.00	0.00	
3500	0.00	0.00	0.00	0.25	0.00	0.25	0.00	0.00	0.49	0.43	0.45	0.00	
4000	0.00	0.00	0.24	0.00	0.24	0.50	0.00	0.24	0.49	0.22	0.00	0.00	
4500	0.00	0.00	0.00	0.25	0.00	0.00	0.49	0.47	0.49	0.00	0.23	0.00	
5000	0.00	0.00	0.00	0.00	0.00	0.50	3.17	4.03	1.21	0.43	0.00	0.00	
5500	0.00	0.00	0.00	0.00	1.90	7.25	4.63	3.79	4.13	1.72	0.00	0.23	
6000	0.00	0.27	0.73	2.97	5.92	4.00	2.44	0.95	3.16	4.74	2.93	0.68	
6500	0.48	0.53	1.70	2.23	2.84	0.00	0.00	0.00	0.00	0.22	0.90	0.45	
Total	420	374	411	404	422	400	410	422	412	464	444	444	5027

Figure 28-7

CLIMATOLOGY ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												Total
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
-3500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	
-2500	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.22	0.00	0.00	
-2000	0.00	0.00	0.00	0.00	0.95	0.75	0.49	0.47	0.00	0.00	0.00	0.00	
-1500	0.00	0.00	0.24	0.99	0.24	7.75	1.95	1.42	0.24	0.22	0.68	0.23	
-1000	0.95	1.07	1.22	6.44	7.11	18.25	13.86	7.11	7.28	2.16	2.25	1.35	
-500	20.00	33.96	37.23	37.87	26.54	24.25	24.15	22.04	23.54	22.20	35.81	29.95	
0	61.90	47.06	41.61	29.46	26.30	21.00	22.93	31.99	32.77	33.19	36.94	48.20	
500	12.14	12.83	12.65	11.14	1.54	7.00	13.17	15.40	15.05	21.77	12.16	13.06	
1000	4.05	3.22	2.19	4.46	4.74	4.00	5.37	7.35	5.34	6.97	3.83	4.28	
1500	0.24	0.27	1.46	2.48	2.61	1.25	4.13	2.13	2.67	2.16	1.80	1.13	
2000	0.24	0.53	0.49	0.50	2.13	2.00	1.95	1.18	1.70	1.29	1.35	0.23	
2500	0.00	0.00	0.00	0.99	0.95	0.50	0.73	0.47	0.37	0.65	0.68	0.23	
3000	0.00	0.00	0.00	0.25	0.00	0.75	0.71	0.17	0.24	0.55	0.23	0.00	
3500	0.00	0.00	0.24	0.00	0.00	0.25	0.00	0.24	0.73	0.22	0.13	0.03	
4000	0.00	0.00	0.24	0.00	0.24	0.25	0.00	0.41	0.00	0.27	0.00	0.03	
4500	0.00	0.00	0.00	0.25	0.00	0.00	0.24	0.00	0.24	0.22	0.21	0.03	
5000	0.00	0.00	0.00	0.00	0.00	7.75	6.83	0.00	0.00	0.22	0.00	0.03	
5500	0.00	0.00	0.00	0.00	0.47	3.50	3.66	6.10	7.51	0.00	0.00	0.00	
6000	0.00	0.53	0.23	3.48	10.19	0.50	0.00	2.84	1.45	0.00	1.83	0.45	
6500	0.48	0.27	1.95	0.74	0.00	0.00	0.00	0.00	0.00	1.08	0.00	0.00	
Total	411	374	411	404	422	400	410	427	412	404	444	444	5027

Figure 28-8

HEIGHT DISTRIBUTION

riverhead, NY (ACY RAOB Data) Range=175 NM Angle=0 DEG

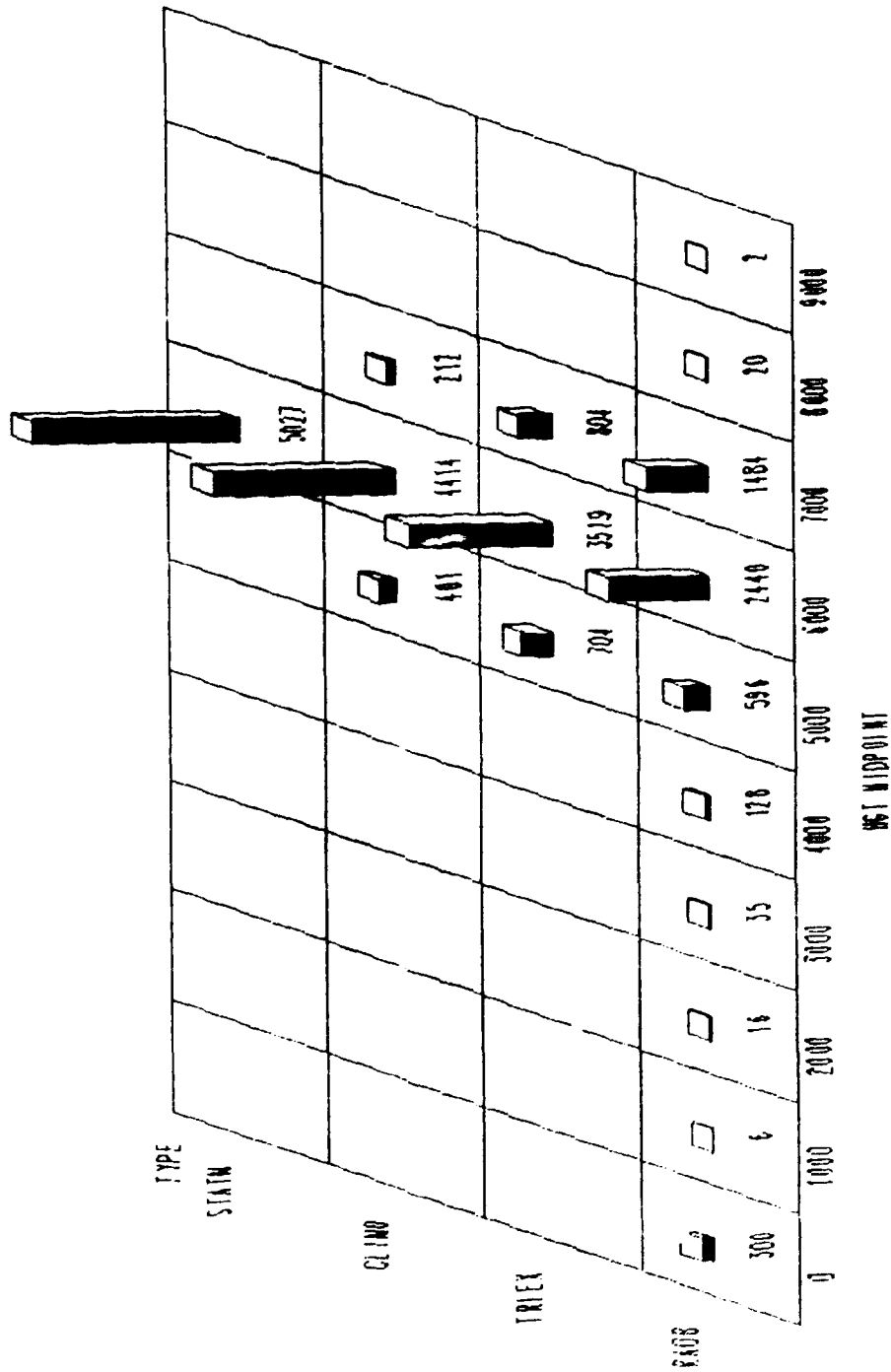


Figure 28-9

RMS ERRORS (meters) FOR
Silver City, NM (TUS RAOB Data)
Range=175 NM Angle=0 DEG

ENTIRE POR

TRIEXPONENTIAL	CLIMATOLOGY	STANDARD ATMOSPHERE
390	403	531

RMS HEIGHT ERRORS FROM THE TRIEXPONENTIAL MODEL
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	419	483	345
FEB	334	272	387
MAR	451	218	598
APR	341	134	463
MAY	331	143	446
JUN	350	205	447
JUL	245	189	292
AUG	249	231	265
SEP	511	201	696
OCT	503	450	552
NOV	465	460	469
DEC	364	373	354

RMS HEIGHT ERRORS FROM CLIMATOLOGY
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	422	478	358
FEB	343	277	399
MAR	453	227	598
APR	348	163	466
MAY	338	143	455
JUN	346	124	469
JUL	307	257	351
AUG	292	266	315
SEP	538	286	707
OCT	517	470	561
NOV	466	451	480
DEC	372	372	371

Figure 29-1

MONTHLY RMS HEIGHT ERRORS
 Silver City, NM (TUE RA08 Data) Range=175 NM Angle=0 DEG

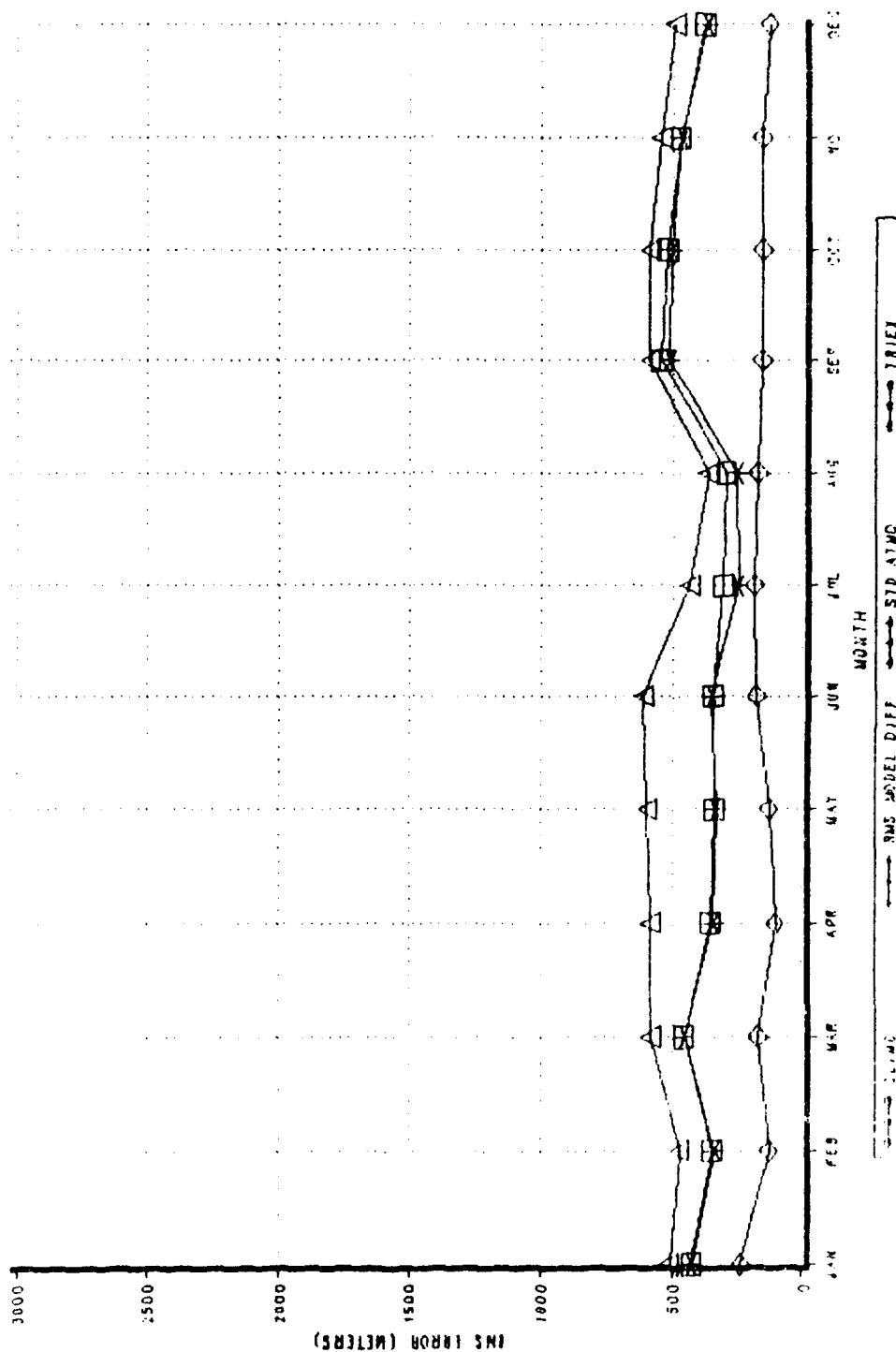


Figure 29-2

MONTHLY RMS HEIGHT ERRORS BY HOUR

Silver City, NM (TUS RA08 Data)
Range=175 NM Angle=0 DEG

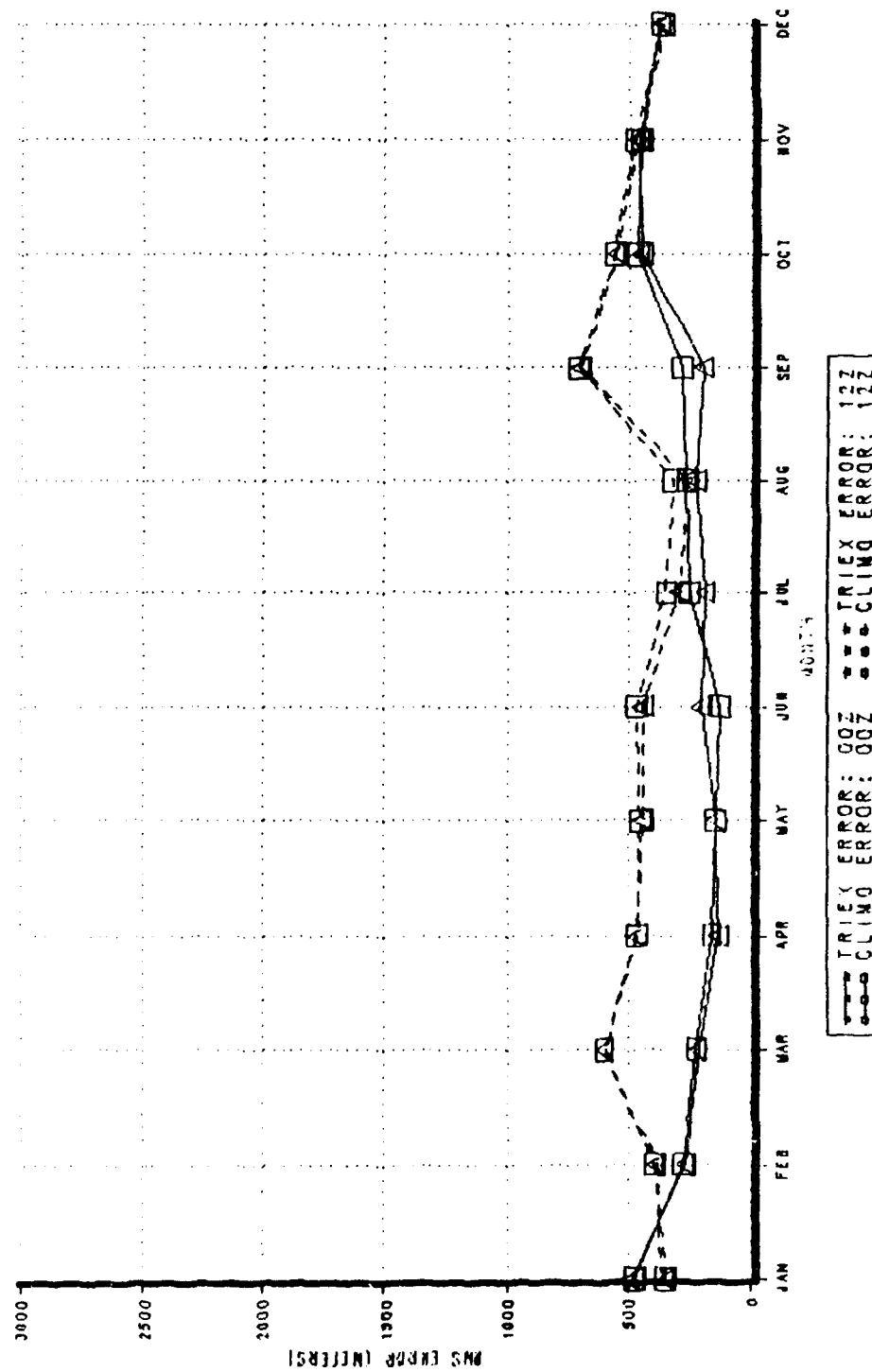


Figure 29-3

ERROR STATISTICS
Silver City, NM (TUS RAOB Data)
Range=175 NM Angle=0 DEG

MODEL	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
TRIEXPONENTIAL	93.86	378.76	-1926.8	7078.5
CLIMATOLOGY	43.20	400.99	-1406.5	7099.4
STANDARD ATMOSPHERE	-331.13	415.29	-1623.6	6623.6

Figure 29-4

TRIEXPONENTIAL MODEL ERRORS
Silver City, NM (TUS RAOB Data)
Range=175 NM Angle=0 DEG

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-2000	1	0.0	1	0.0
-1500	2	0.0	3	0.0
-1000	12	0.2	15	0.2
-500	343	4.4	358	4.6
0	6158	79.1	6516	83.7
500	1105	14.2	7621	97.8
1000	108	1.4	7729	99.2
1500	32	0.4	7761	99.6
2000	7	0.1	7768	99.7
2500	2	0.0	7770	99.8
3000	3	0.0	7773	99.8
3500	1	0.0	7774	99.8
4000	3	0.0	7777	99.8
4500	1	0.0	7778	99.9
7000	11	0.1	7789	100.0

CLIMATOLOGY ERRORS

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-1500	1	0.0	1	0.0
-1000	10	0.1	11	0.1
-500	891	11.4	902	11.6
0	5574	71.6	6476	83.1
500	1135	14.6	7611	97.7
1000	121	1.6	7732	99.3
1500	29	0.4	7761	99.6
2000	8	0.1	7769	99.7
2500	1	0.0	7770	99.8
3000	2	0.0	7772	99.8
3500	2	0.0	7774	99.8
4000	3	0.0	7777	99.8
4500	1	0.0	7778	99.9
7000	11	0.1	7789	100.0

Figure 29-5

HEIGHT ERROR DISTRIBUTION Silver City, NM (TUS RA08 Data) Range=175 NM Angle=0 DEG

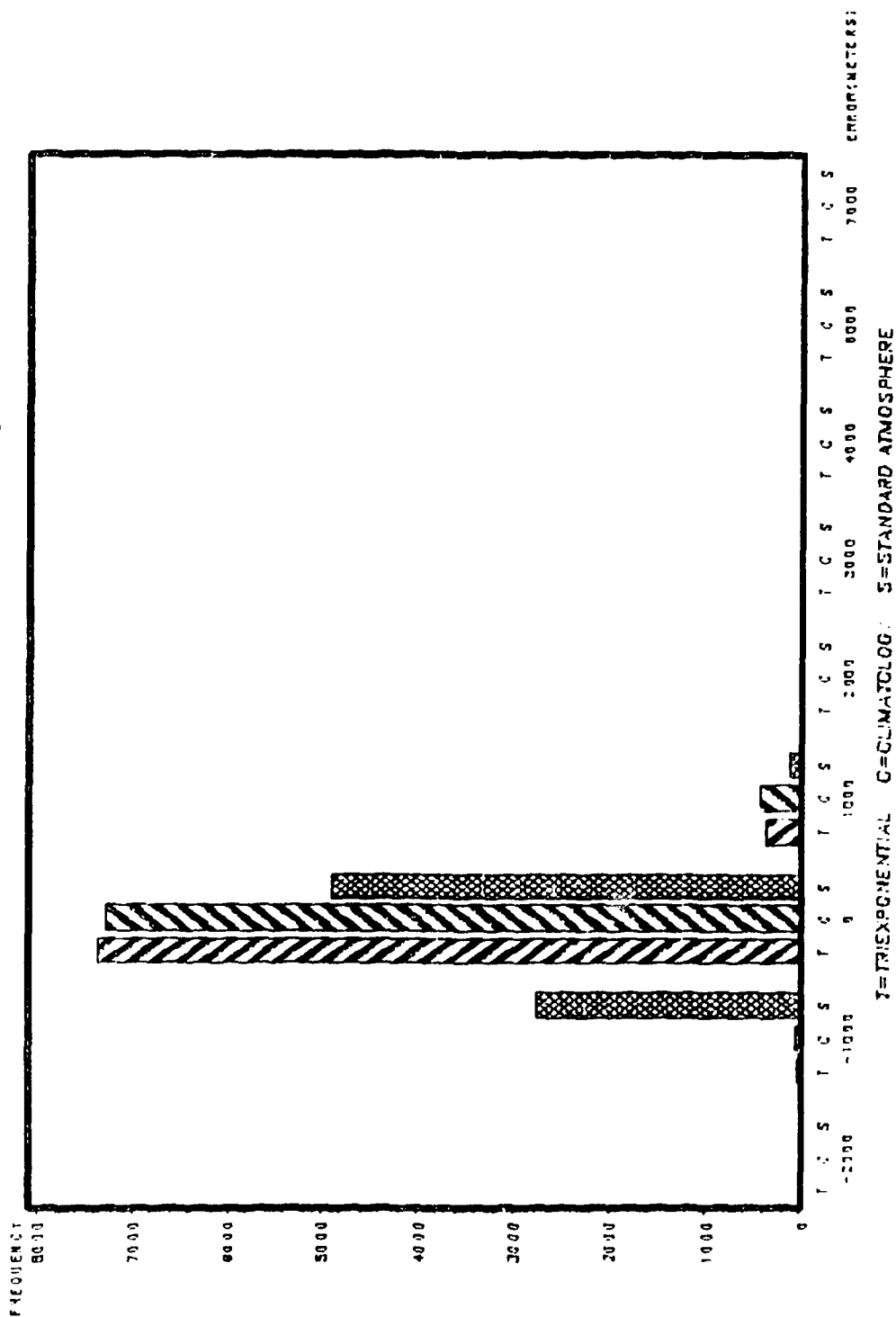


Figure 29-6

TRIEXPONENTIAL MODEL ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
-2000	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	
-1500	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.15	0.00	0.00	0.00	0.00	
-1000	0.15	0.00	0.00	0.16	0.15	0.16	0.30	0.15	0.31	0.00	0.15	0.30	
-500	4.03	2.45	2.11	1.74	4.39	5.25	10.17	9.36	4.70	2.40	3.25	2.87	
0	71.49	77.58	81.60	87.82	88.48	88.06	79.51	77.30	78.06	73.05	70.94	75.49	
500	21.34	16.20	14.03	8.70	6.21	5.73	9.26	12.12	14.73	20.96	22.26	18.15	
1000	1.64	2.95	1.66	1.11	0.61	0.32	0.61	0.77	1.25	1.65	2.32	1.82	
1500	1.04	0.49	0.30	0.32	0.00	0.00	0.00	0.15	0.16	1.20	0.31	0.91	
2000	0.15	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.15	0.31	0.15	
2500	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.15	0.00	0.00	
3000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.15	0.00	0.15	
3500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	
4000	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.15	
4500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	
7000	0.15	0.00	0.30	0.16	0.15	0.16	0.00	0.00	0.31	0.30	0.15	0.00	
Total	670	611	663	632	650	628	659	652	638	668	647	661	7789

Figure 29-7

CLIMATOLOGY ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												Total
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
-1500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00	
-1000	0.30	0.00	0.15	0.16	0.00	0.16	0.00	0.31	0.00	0.00	0.15	0.30	
-500	30.00	4.91	14.93	4.11	2.58	1.59	17.15	19.02	9.40	13.32	8.96	9.68	
0	57.16	76.43	73.91	83.23	86.52	86.94	63.43	62.12	66.14	63.77	71.10	69.59	
500	10.45	5.06	9.20	11.71	10.15	10.51	17.60	17.48	20.36	19.16	16.07	17.10	
1000	0.90	2.62	1.36	0.47	0.61	0.48	1.67	0.77	2.98	2.10	2.63	2.12	
1500	0.90	0.55	0.15	0.16	0.00	0.16	0.00	0.31	0.16	1.05	0.15	0.76	
2000	0.15	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.15	0.46	0.15	
2500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	
3000	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.15	
3500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.15	0.00	
4000	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.15	
4500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	
7000	0.15	0.00	0.30	0.16	0.15	0.16	0.00	0.00	0.31	0.30	0.15	0.00	
Total	670	611	663	632	660	628	659	652	638	668	647	661	7789

Figure 29-8

HEIGHT DISTRIBUTION

Silver City, NM (TUS RAOB Data) Range=175 NM Angle=0 DEG

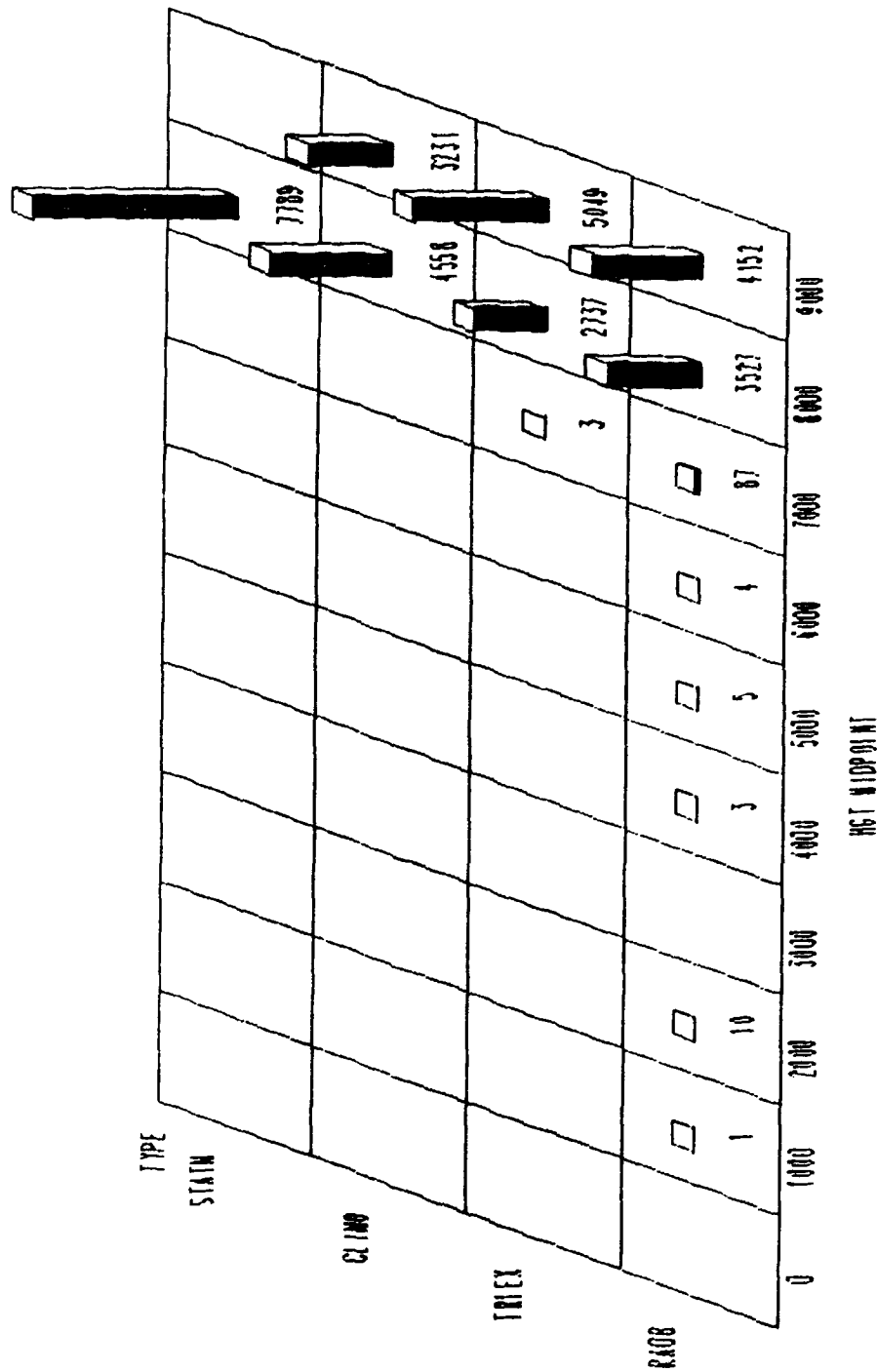


Figure 29-9

RMS ERRORS (meters) FOR
 Empire, MI (GRB RAOB Data)
 Range=175 NM Angle=0 DEG

ENTIRE POR

TRIEXPONENTIAL	CLIMATOLOGY	STANDARD ATMOSPHERE
990	978	1057

RMS HEIGHT ERRORS FROM THE TRIEXPONENTIAL MODEL
 BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	446	185	606
FEB	525	166	722
MAR	469	225	625
APR	935	273	1292
MAY	1092	461	1472
JUN	1293	612	1719
JUL	1466	717	1943
AUG	1478	771	1939
SEP	1170	401	1605
OCT	992	687	1219
NOV	634	442	777
DEC	341	196	442

RMS HEIGHT ERRORS FROM CLIMATOLOGY
 BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	460	198	623
FEB	522	194	712
MAR	467	265	607
APR	942	305	1294
MAY	1102	510	1471
JUN	1267	633	1674
JUL	1450	783	1893
AUG	1427	836	1834
SEP	1135	490	1529
OCT	987	712	1198
NOV	649	488	775
DEC	341	203	440

Figure 30-1

MONTHLY RMS HEIGHT ERRORS
 Empire, MI (GRB RAOB Data) Range=175 NM Angle=0 DEG

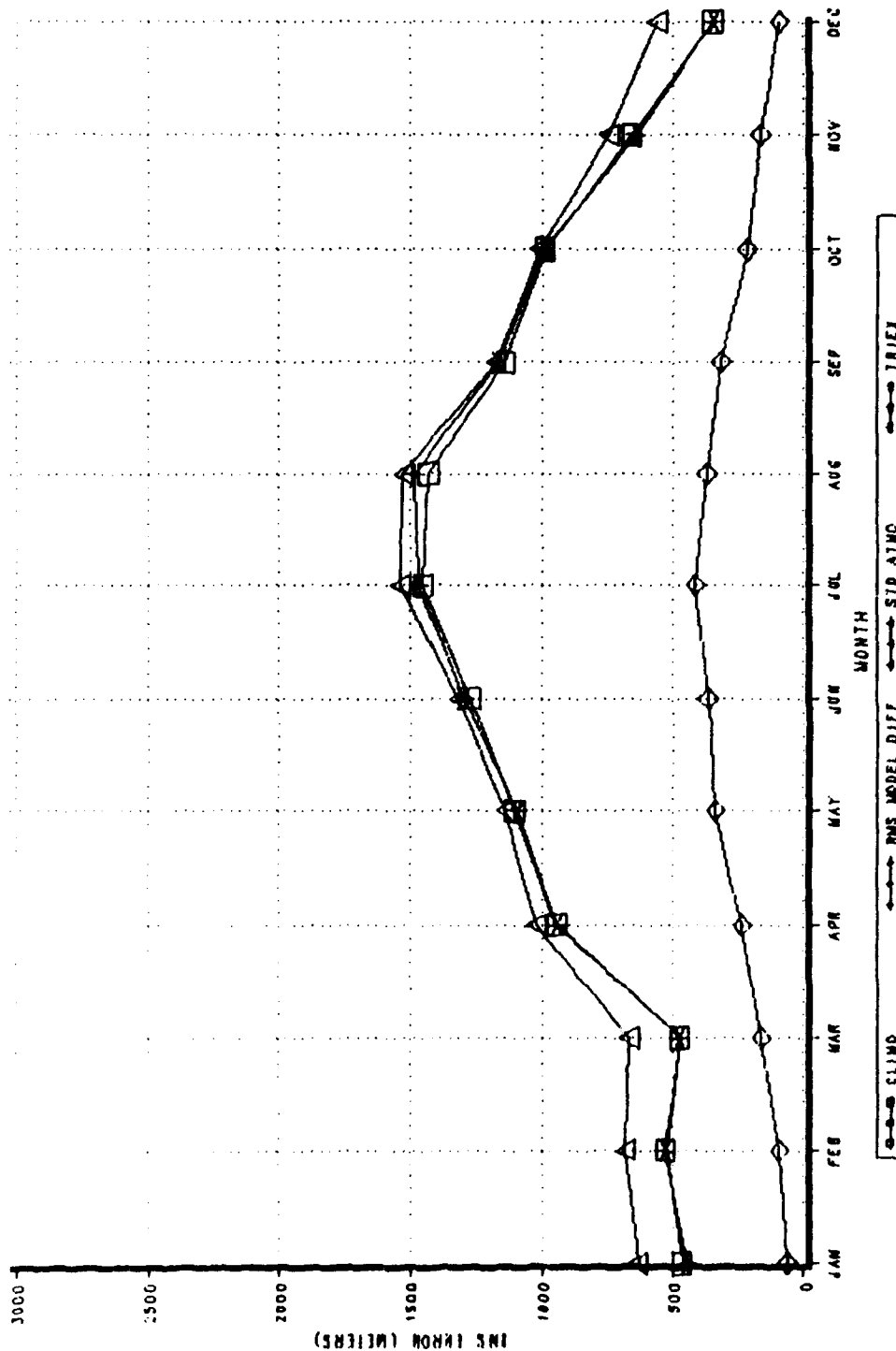


Figure 30-2

MONTHLY RMS HEIGHT ERRORS BY HOUR

Empire, MI (GRB PAOB Data)
Range=175 NM Angle=0 DEG

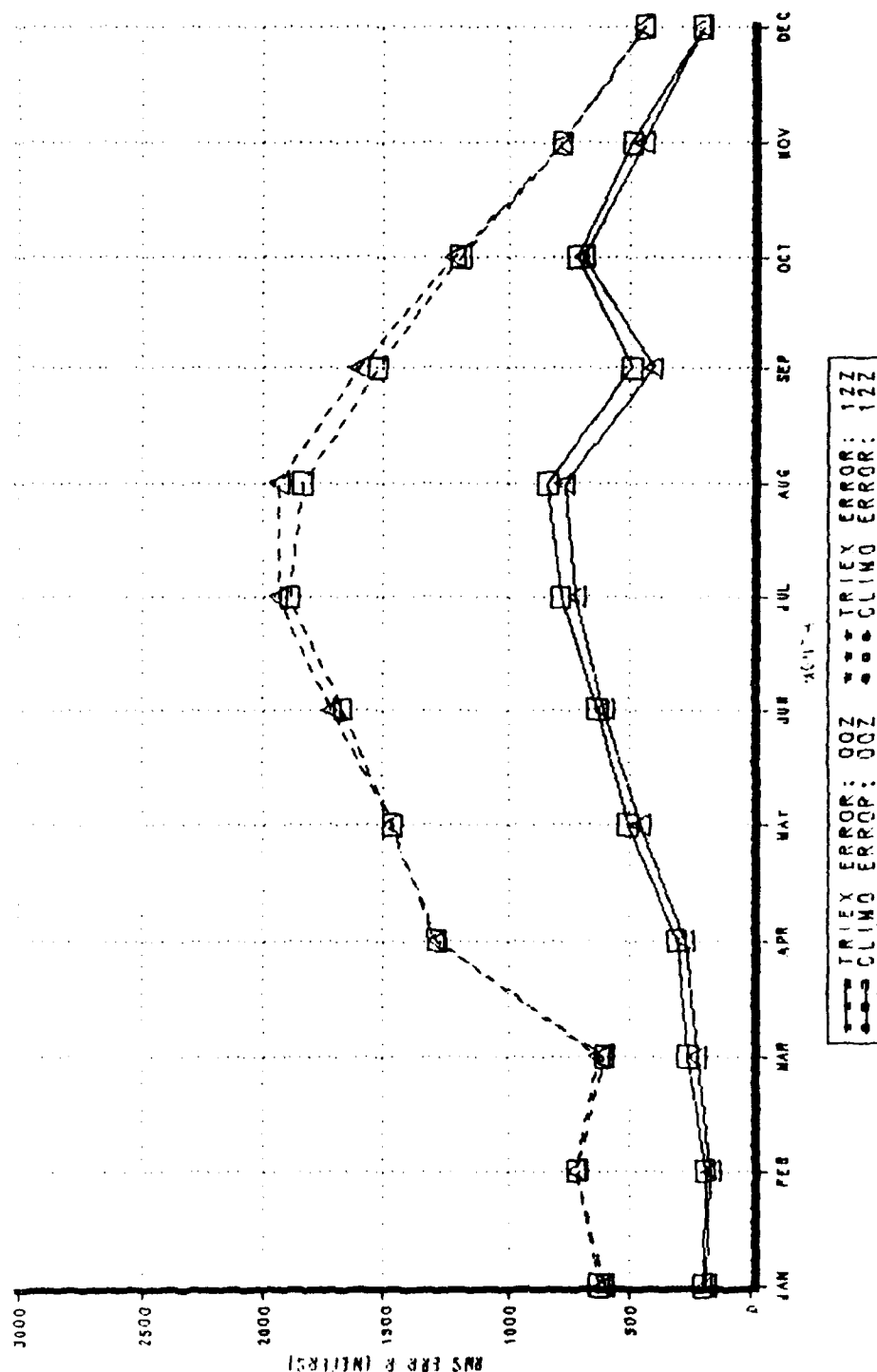


Figure 30-3

ERROR STATISTICS
 Empire, MI (GRB RAOB Data)
 Range=175 NM Angle=0 DEG

MODEL	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
TRIEXPONENTIAL	132.74	981.35	-1842.2	6624.5
CLIMATOLOGY	147.07	966.77	-2191.6	6621.8
STANDARD ATMOSPHERE	-133.68	1048.38	-1944.6	6105.6

Figure 30-4

TRIEXPONENTIAL MODEL ERRORS
 Empire, MI (GRB RAOB Data)
 Range=175 NM Angle=0 DEG

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-2000	1	0.0	1	0.0
-1500	8	0.1	9	0.1
-1000	98	1.3	107	1.4
-500	1590	20.7	1697	22.1
0	4494	58.4	6191	80.5
500	931	12.1	7122	92.6
1000	224	2.9	7346	95.5
1500	87	1.1	7433	96.7
2000	38	0.5	7471	97.2
2500	28	0.4	7499	97.5
3000	12	0.2	7511	97.7
3500	12	0.2	7523	97.8
4000	2	0.0	7525	97.9
4500	3	0.0	7528	97.9
5000	7	0.1	7535	98.0
5500	31	0.4	7566	98.4
6000	81	1.1	7647	99.4
6500	43	0.6	7690	100.0

CLIMATOLOGY ERRORS

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-2000	3	0.0	3	0.0
-1500	14	0.2	17	0.2
-1000	103	1.3	120	1.6
-500	1483	19.3	1603	20.8
0	4426	57.6	6029	78.4
500	1088	14.1	7117	92.5
1000	245	3.2	7362	95.7
1500	71	0.9	7433	96.7
2000	47	0.6	7480	97.3
2500	23	0.3	7503	97.6
3000	15	0.2	7518	97.8
3500	5	0.1	7523	97.8
4000	2	0.0	7525	97.9
4500	4	0.1	7529	97.9
5000	2	0.0	7531	97.9
5500	64	0.8	7595	98.8
6000	65	0.8	7660	99.6
6500	30	0.4	7690	100.0

Figure 30-5

HEIGHT ERROR DISTRIBUTION Empire, MI (GPB RADAR Data) Range=175 NM Angle=0 DEG

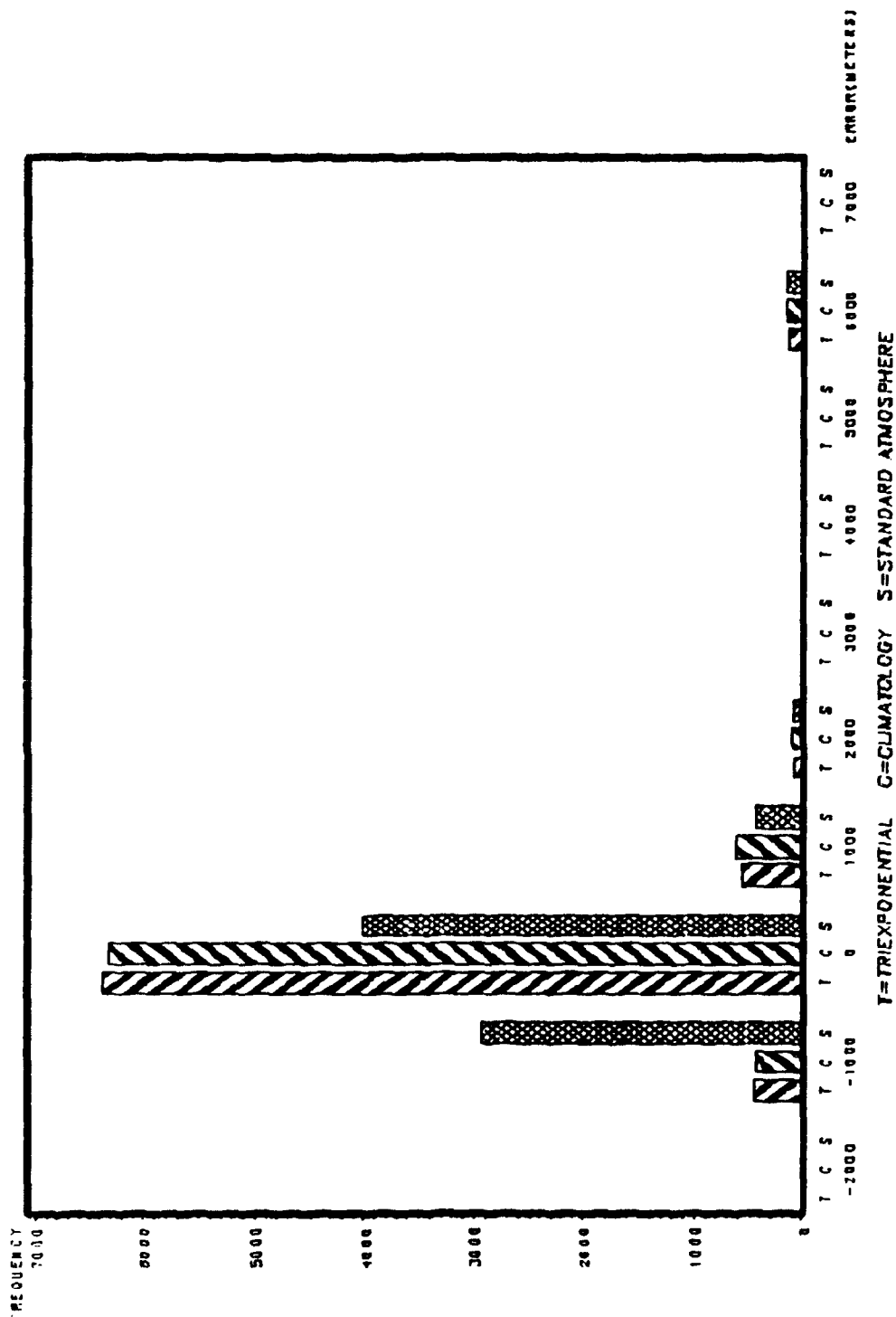


Figure 30-6

TRIEXPONENTIAL MODEL ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												Total
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
-2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00	
-1500	0.00	0.00	0.00	0.00	0.15	0.31	0.45	0.15	0.00	0.15	0.00	0.00	
-1000	0.00	0.00	0.15	0.66	1.21	3.77	4.97	3.16	0.79	0.00	0.31	0.00	
-500	0.64	2.01	7.80	20.98	30.80	39.56	44.43	39.85	32.54	15.45	8.01	3.29	
0	84.46	81.44	76.16	61.31	47.65	35.16	25.90	30.53	41.59	63.33	74.25	83.26	
500	12.66	14.55	12.74	11.15	9.71	10.52	10.54	10.98	12.86	14.09	13.97	11.74	
1000	1.44	0.84	1.80	3.28	4.86	3.30	4.82	4.06	4.76	2.58	1.73	1.25	
1500	0.16	0.50	0.60	0.16	1.82	2.20	1.51	2.26	2.38	0.76	0.78	0.31	
2000	0.16	0.00	0.45	0.00	0.30	0.47	0.90	1.65	0.95	0.76	0.16	0.00	
2500	0.00	0.17	0.00	0.16	0.61	0.63	0.75	1.20	0.32	0.45	0.00	0.00	
3000	0.00	0.00	0.00	0.49	0.15	0.31	0.00	0.45	0.32	0.15	0.00	0.00	
3500	0.16	0.00	0.00	0.00	0.00	0.00	0.45	0.60	0.48	0.15	0.00	0.00	
4000	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.15	0.00	0.00	
4500	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.15	0.16	0.00	0.00	0.00	
5000	0.00	0.00	0.00	0.00	0.15	0.31	0.15	0.45	0.00	0.00	0.00	0.00	
5500	0.00	0.00	0.00	0.00	0.00	0.31	2.56	1.20	0.63	0.00	0.00	0.00	
6000	0.16	0.00	0.00	0.49	1.52	2.20	2.56	3.01	1.43	0.91	0.16	0.00	
6500	0.16	0.50	0.30	1.31	0.76	0.94	0.00	0.30	0.63	1.06	0.63	0.16	
Total	624	598	667	610	659	637	664	665	630	660	637	639	7690

Figure 30-7

CLIMATOLOGY ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
-2000	0.00	0.00	0.00	0.00	0.15	0.16	0.15	0.00	0.00	0.00	0.00	0.00	
-1500	0.00	0.00	0.00	0.00	0.00	0.47	1.20	0.30	0.16	0.00	0.00	0.00	
-1000	0.00	0.00	0.00	0.82	1.21	3.61	4.67	2.56	2.38	0.30	0.31	0.00	
-500	1.12	8.53	13.94	11.97	18.06	28.10	30.57	35.34	36.35	25.45	14.13	5.63	
0	83.97	77.42	59.42	56.89	52.05	42.70	32.83	32.18	33.81	54.24	67.35	81.53	
500	12.18	12.21	13.79	14.59	16.24	13.81	16.57	14.74	16.67	13.48	13.97	11.27	
1000	1.92	0.84	1.80	2.79	6.53	4.24	4.67	4.66	4.44	2.42	2.51	1.10	
1500	0.16	0.33	0.30	0.16	1.82	1.73	1.96	1.65	1.11	0.61	0.78	0.31	
2000	0.16	0.00	0.45	0.33	0.61	0.63	1.05	1.65	1.43	0.76	0.16	0.00	
2500	0.00	0.17	0.00	0.16	0.61	0.63	0.45	1.05	0.16	0.30	0.00	0.00	
3000	0.00	0.00	0.00	0.49	0.00	0.16	0.45	0.45	0.48	0.30	0.00	0.00	
3500	0.16	0.00	0.00	0.00	0.00	0.00	0.15	0.30	0.16	0.00	0.00	0.00	
4000	0.00	0.00	0.00	0.00	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.16	0.15	0.00	0.00	
5000	0.00	0.00	0.00	0.00	0.15	0.16	0.00	0.00	0.00	0.00	0.00	0.00	
5500	0.00	0.00	0.00	0.00	0.00	0.31	4.82	4.21	0.32	0.00	0.00	0.00	
6000	0.00	0.00	0.00	0.33	1.97	3.14	0.15	0.60	2.38	1.52	0.00	0.00	
6500	0.32	0.50	0.30	1.48	0.30	0.16	0.30	0.00	0.00	0.45	0.78	0.16	
Total	624	598	667	610	659	637	664	665	630	660	637	639	7690

Figure 30-8

HEIGHT DISTRIBUTION

Emple, MI (GRB RAOB Data) Range = 175 NM Angle = 0 DEG

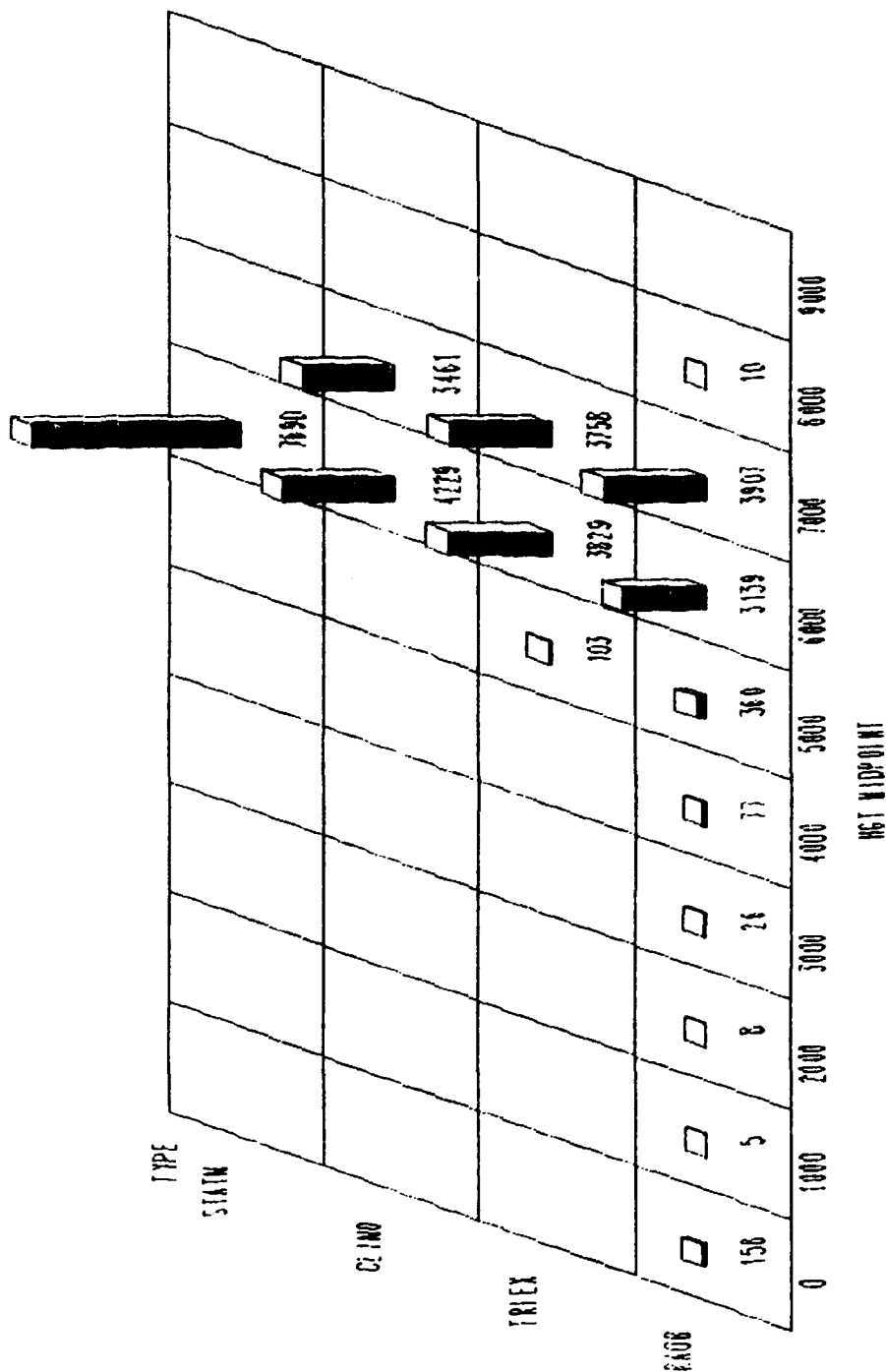


Figure 30-9

RMS ERRORS (meters) FOR
 Finley, ND (BIS RAOB Data)
 Range=175 NM Angle=0 DEG

ENTIRE FOR

TRIEXPONENTIAL	CLIMATOLOGY	STANDARD ATMOSPHERE
1805	1802	1773

RMS HEIGHT ERRORS FROM THE TRIEXPONENTIAL MODEL
 BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	1403	1276	1520
FEB	1728	1489	1940
MAR	1449	1358	1536
APR	1896	1353	2312
MAY	2056	1901	2202
JUN	1914	1674	2128
JUL	1566	1066	1940
AUG	1545	1289	1764
SEP	1998	1412	2447
OCT	1994	1483	2401
NOV	1912	1669	2130
DEC	2029	1897	2153

RMS HEIGHT ERRORS FROM CLIMATOLOGY
 BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	1392	1272	1502
FEB	1733	1509	1932
MAR	1465	1389	1537
APR	1878	1404	2251
MAY	2060	1979	2138
JUN	1929	1774	2073
JUL	1555	1142	1878
AUG	1577	1351	1773
SEP	1982	1489	2374
OCT	1988	1531	2359
NOV	1894	1677	2093
DEC	2005	1876	2127

Figure 31-1

MONTHLY RMS HEIGHT ERRORS
 Finley, ND (BIS RAOB Data) Range=175 NM Angle=0 DEG

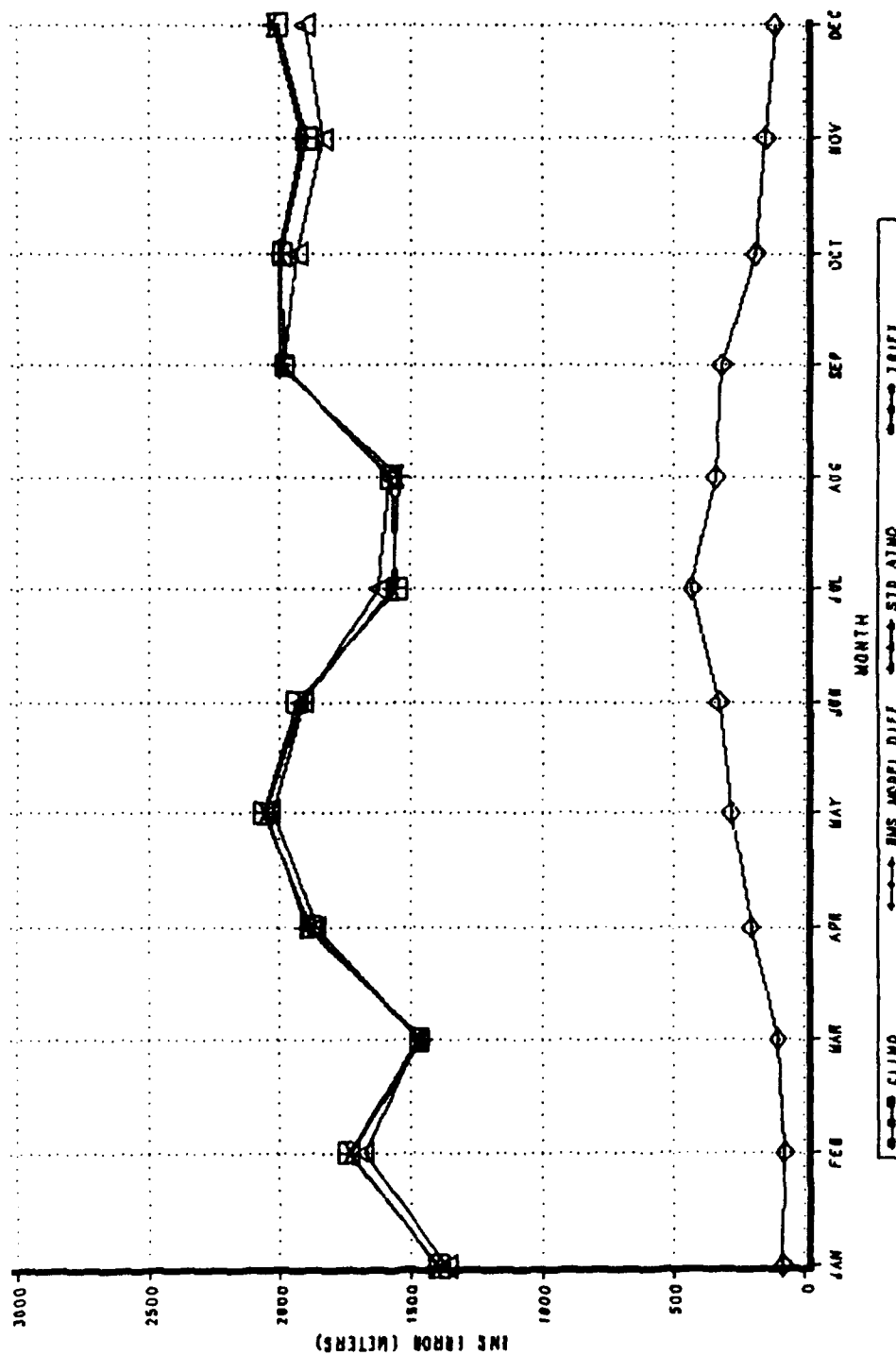


Figure 31-2

MONTHLY RMS HEIGHT ERRORS BY HOUR

Finley, ND (BIS RADAR Data)
Range=173 NM Angle=0 DEG

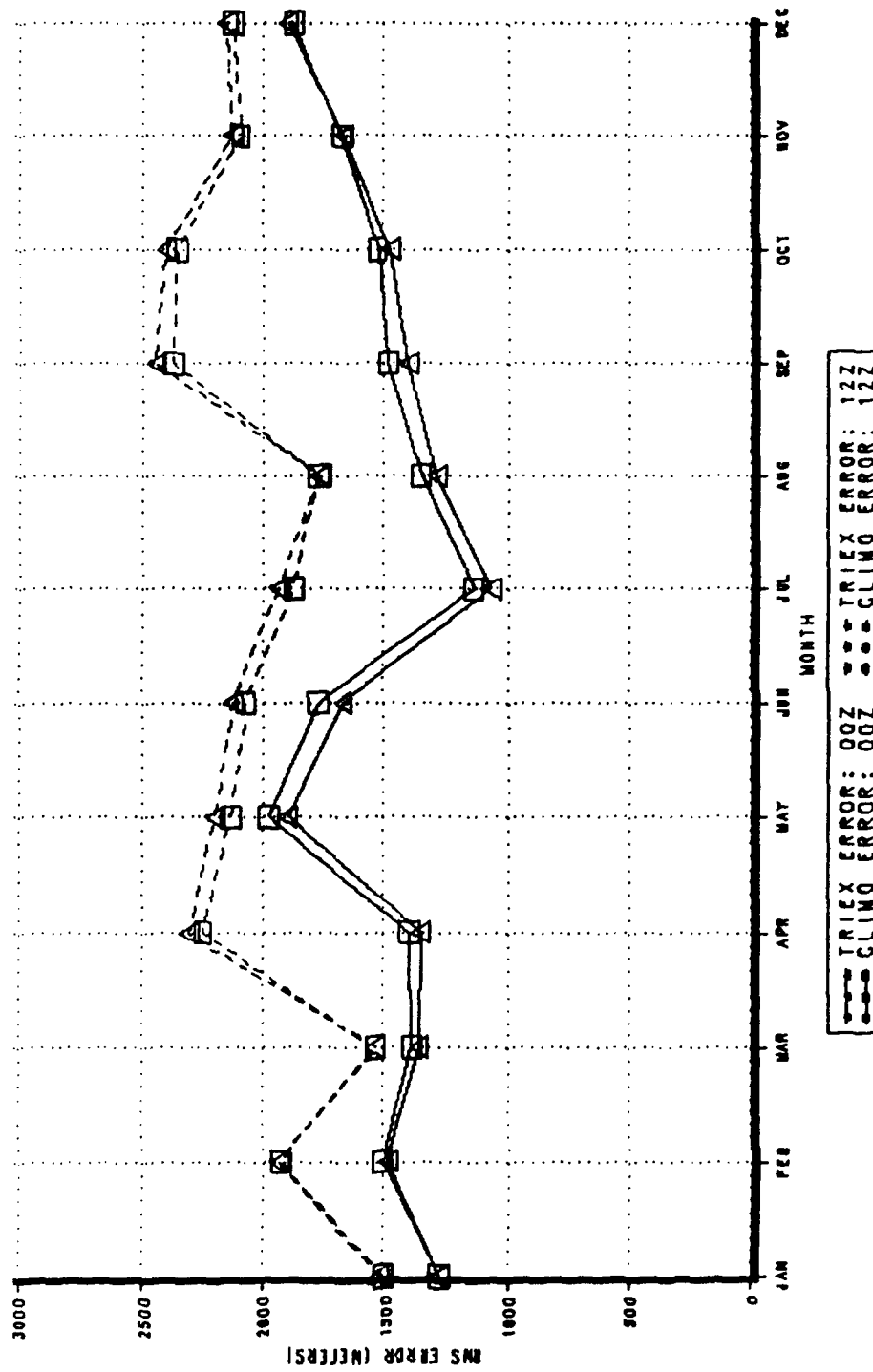


Figure 31-3

ERROR STATISTICS
 Finley, ND (BIS RAOB Data)
 Range=175 NM Angle=0 DEG

MODEL	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
TRIEXPONENTIAL	478.23	1740.70	-2098.2	6748.9
CLIMATOLOGY	463.83	1740.92	-3034.8	6741.2
STANARD ATMOSPHERE	17.72	1772.57	-3005.7	5970.7

Figure 31-4

TRIEXPONENTIAL MODEL ERRORS
 Finley, ND (BIS RAOB Data)
 Range=175 NM Angle=0 DEG

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-2000	8	0.1	8	0.1
-1500	31	0.4	39	0.5
-1000	148	1.9	187	2.4
-500	1868	23.7	2055	26.1
0	3786	48.1	5841	74.1
500	897	11.4	6738	85.5
1000	298	3.8	7036	89.3
1500	130	1.7	7166	91.0
2000	51	0.6	7217	91.6
2500	29	0.4	7246	92.0
3000	21	0.3	7267	92.2
3500	14	0.2	7281	92.4
4000	15	0.2	7296	92.6
4500	7	0.1	7303	92.7
5000	3	0.0	7306	92.7
5500	14	0.2	7320	92.9
6000	146	1.9	7466	94.8
6500	412	5.2	7878	100.0

CLIMATOLOGY ERRORS

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-3000	1	0.0	1	0.0
-2500	2	0.0	3	0.0
-2000	6	0.1	9	0.1
-1500	40	0.5	49	0.6
-1000	203	2.6	252	3.2
-500	1838	23.3	2090	26.5
0	3762	47.8	5852	74.3
500	902	11.4	6754	85.7
1000	304	3.9	7058	89.6
1500	112	1.4	7170	91.0
2000	50	0.6	7220	91.6
2500	28	0.4	7248	92.0
3000	23	0.3	7271	92.3
3500	12	0.2	7283	92.4
4000	15	0.2	7298	92.6
4500	5	0.1	7303	92.7
5000	3	0.0	7306	92.7
5500	31	0.4	7337	93.1
6000	137	1.7	7474	94.9
6500	404	5.1	7878	100.0

Figure 31-5

HEIGHT ERROR DISTRIBUTION Finley, ND (BIS RAOB Data) Range=175 NM Angle=0 DEG

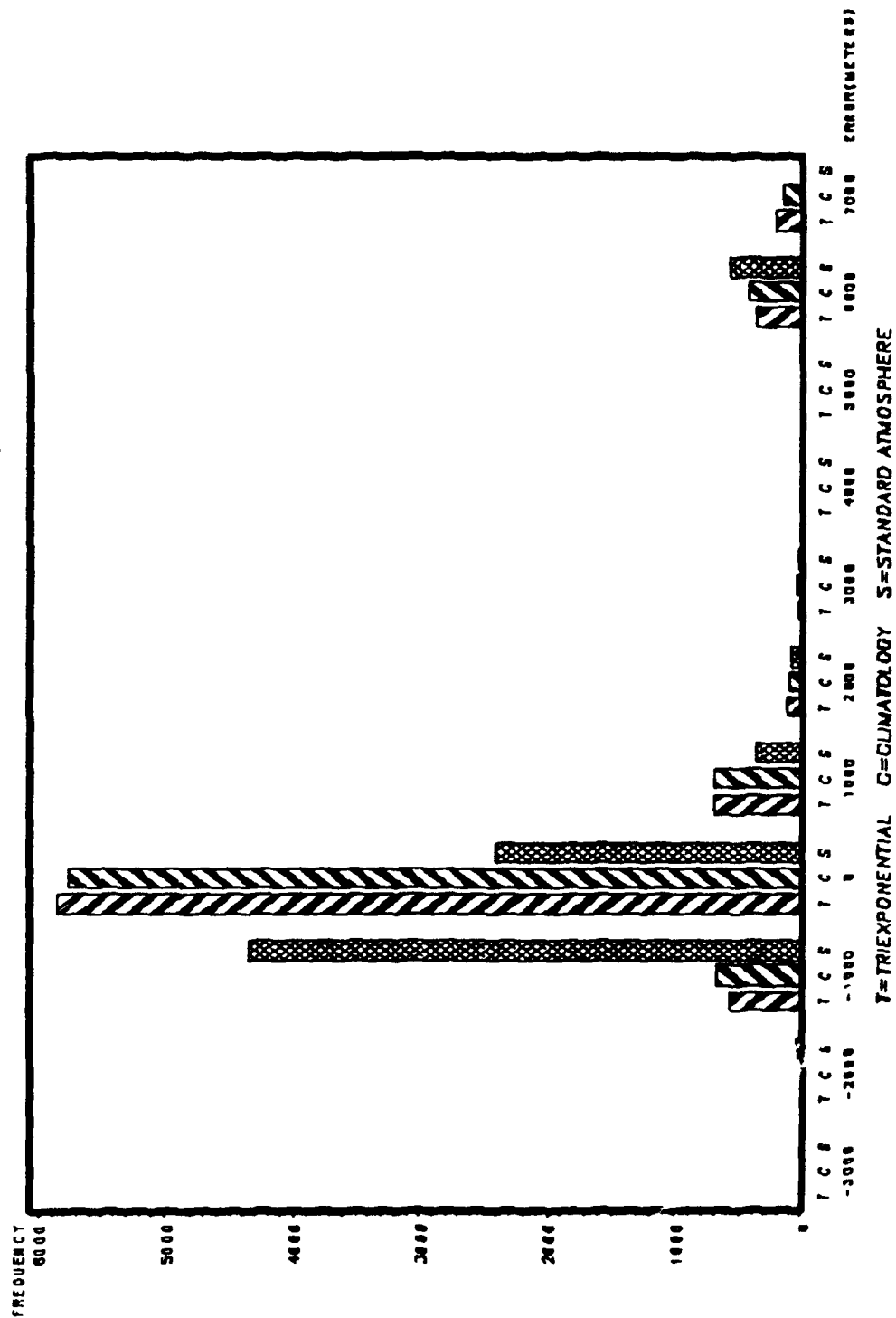


Figure 31-6

TRIEXPONENTIAL MODEL ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
-2000	0.00	0.00	0.00	0.00	0.00	0.15	0.31	0.60	0.15	0.00	0.00	0.00	
-1500	0.00	0.16	0.15	0.15	0.45	0.61	1.41	1.49	0.00	0.30	0.00	0.00	
-1000	0.00	0.00	0.00	0.31	2.85	2.15	6.56	7.00	2.31	1.04	0.15	0.15	
-500	3.70	7.84	12.76	25.96	34.03	38.96	44.53	43.07	38.98	22.26	9.10	3.46	
0	68.49	68.79	66.62	47.47	36.73	29.45	21.72	26.23	33.74	50.30	63.43	63.70	
500	17.75	11.76	10.98	10.14	8.70	9.82	9.84	8.94	8.94	10.53	12.96	16.11	
1000	4.59	2.29	3.12	4.76	3.00	4.91	4.69	3.73	2.93	4.01	3.55	3.77	
1500	0.59	1.31	1.04	1.54	2.10	2.30	2.50	1.94	2.00	1.04	1.39	2.11	
2000	0.00	0.33	0.15	0.46	0.75	1.07	1.41	1.04	0.46	0.74	0.62	0.75	
2500	0.00	0.33	0.45	0.46	0.45	0.61	0.47	0.30	0.31	0.45	0.00	0.60	
3000	0.44	0.16	0.15	0.31	0.45	0.46	0.31	0.00	0.31	0.15	0.31	0.15	
3500	0.15	0.16	0.00	0.15	0.30	0.15	0.47	0.30	0.31	0.15	0.00	0.00	
4000	0.00	0.33	0.00	0.15	0.15	0.92	0.31	0.00	0.15	0.00	0.31	0.00	
4500	0.15	0.00	0.00	0.15	0.45	0.00	0.00	0.00	0.00	0.00	0.15	0.15	
5000	0.00	0.00	0.00	0.15	0.00	0.00	0.16	0.00	0.00	0.15	0.00	0.00	
5500	0.00	0.00	0.00	0.15	0.15	0.46	1.09	0.30	0.00	0.00	0.00	0.00	
6000	0.00	0.00	0.00	0.00	3.45	6.44	3.91	3.87	4.16	0.15	0.31	0.00	
6500	4.14	6.54	4.60	7.68	6.00	1.53	0.31	1.19	5.24	8.75	7.72	9.04	
Total	676	612	674	651	667	652	640	671	649	674	648	664	7878

Figure 31-7

CLIMATOLOGY ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												Total
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
-3000	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	
-2500	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.15	0.00	0.00	0.00	
-2000	0.00	0.00	0.00	0.00	0.30	0.00	0.16	0.45	0.00	0.00	0.00	0.00	
-1500	0.00	0.16	0.15	0.31	0.90	0.46	2.19	0.89	0.46	0.45	0.00	0.15	
-1000	0.00	0.33	0.00	0.61	4.95	4.60	10.16	4.17	4.93	0.74	0.46	0.15	
-500	9.02	11.60	13.20	28.57	43.18	30.67	25.00	25.34	28.66	23.29	25.77	15.51	
0	66.86	65.69	66.62	45.93	28.04	33.44	31.56	40.24	39.91	48.66	49.85	56.17	
500	14.79	10.95	10.09	9.83	6.30	13.19	14.38	14.01	10.02	10.98	10.80	12.05	
1000	3.70	2.12	3.56	4.15	3.45	3.99	5.47	4.17	3.54	4.75	3.09	4.22	
1500	0.74	1.14	0.89	1.23	0.75	1.84	2.34	3.87	1.39	0.89	0.77	1.20	
2000	0.00	0.49	0.59	0.15	1.05	0.92	1.41	0.45	0.77	0.45	0.46	0.90	
2500	0.00	0.16	0.15	0.61	0.15	1.07	0.78	0.60	0.00	0.45	0.00	0.30	
3000	0.44	0.33	0.15	0.31	0.60	0.00	0.78	0.15	0.31	0.15	0.15	0.15	
3500	0.15	0.33	0.00	0.00	0.15	0.15	0.16	0.30	0.15	0.15	0.31	0.00	
4000	0.00	0.16	0.00	0.15	0.45	0.77	0.31	0.00	0.31	0.00	0.15	0.00	
4500	0.15	0.00	0.00	0.15	0.00	0.15	0.00	0.00	0.00	0.00	0.15	0.15	
5000	0.00	0.00	0.00	0.31	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5500	0.00	0.00	0.00	0.00	0.15	0.15	4.22	0.00	0.15	0.15	0.00	0.00	
6000	0.00	0.00	0.00	0.00	5.25	5.06	0.00	3.58	6.93	0.00	0.00	0.00	
6500	4.14	6.54	4.60	7.68	4.20	3.22	1.09	1.79	2.31	8.90	8.02	9.04	
Total	676	612	674	651	667	652	640	671	649	674	648	664	7878

Figure 31-8

HEIGHT DISRIBUTION

Finley, ND (BIS RAOB Data) Range = 175 NM Angle = 0 DEG

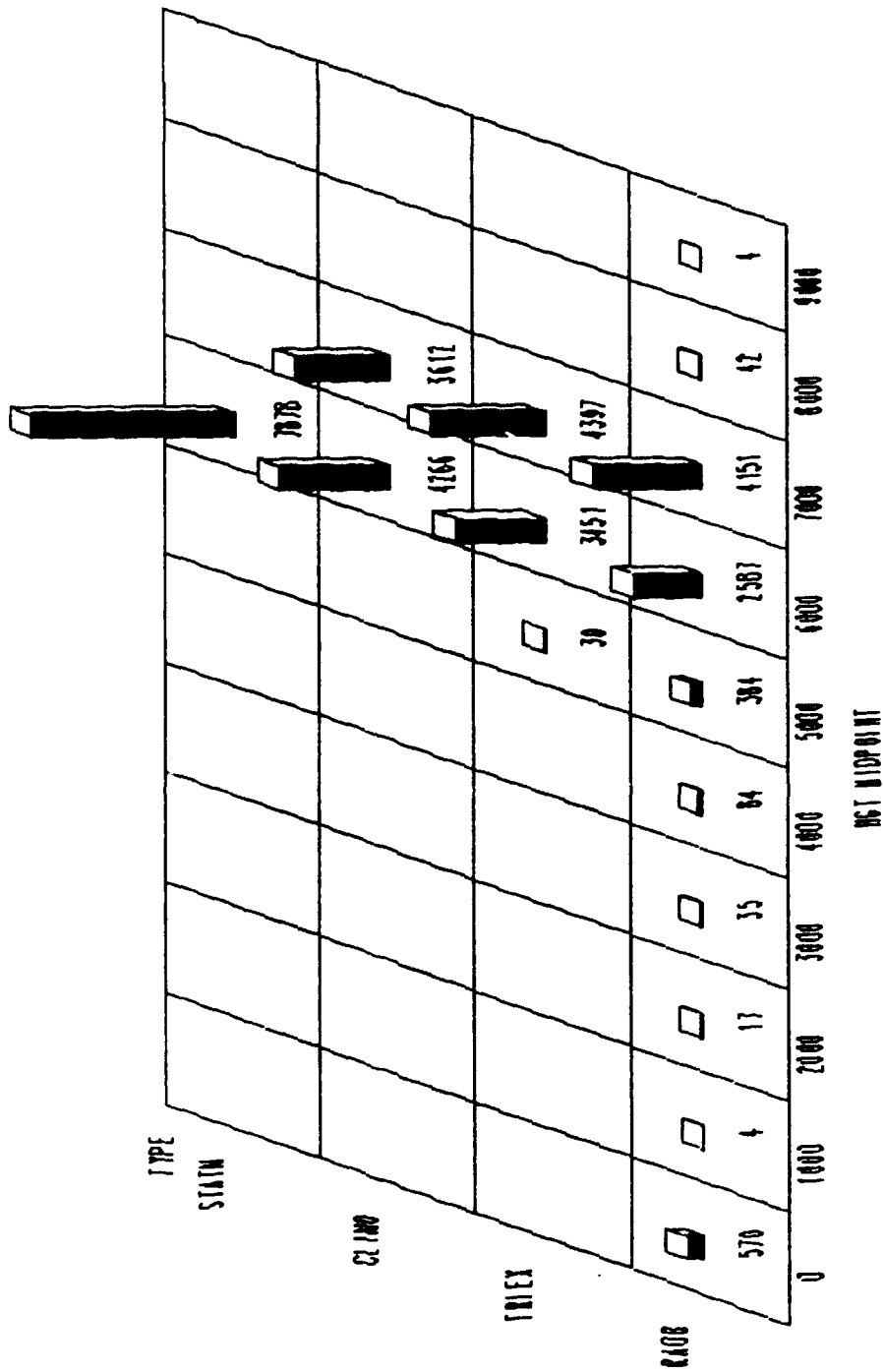


Figure 31-9

RMS ERRORS (meters) FOR
 Utica, NY (ALB RAOB Data)
 Range=175 NM Angle=0 DEG

ENTIRE POR

TRIEXPONENTIAL	CLIMATOLOGY	STANDARD ATMOSPHERE
369	371	545

RMS HEIGHT ERRORS FROM THE TRIEXPONENTIAL MODEL
 BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	165	149	179
FEB	186	171	200
MAR	217	201	232
APR	258	267	248
MAY	502	376	602
JUN	385	394	376
JUL	575	430	691
AUG	415	406	424
SEP	412	337	475
OCT	345	268	407
NOV	375	244	472
DEC	348	413	269

RMS HEIGHT ERRORS FROM CLIMATOLOGY
 BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	171	153	187
FEB	197	173	219
MAR	217	187	244
APR	250	248	252
MAY	510	365	622
JUN	373	335	407
JUL	561	362	706
AUG	395	341	441
SEP	431	374	480
OCT	364	277	432
NOV	388	247	490
DEC	357	429	269

Figure 32-1

MONTHLY RMS HEIGHT ERRORS
 Utica, NY (ALB RAOB Data) Range=175 NM Angle=0 DEG

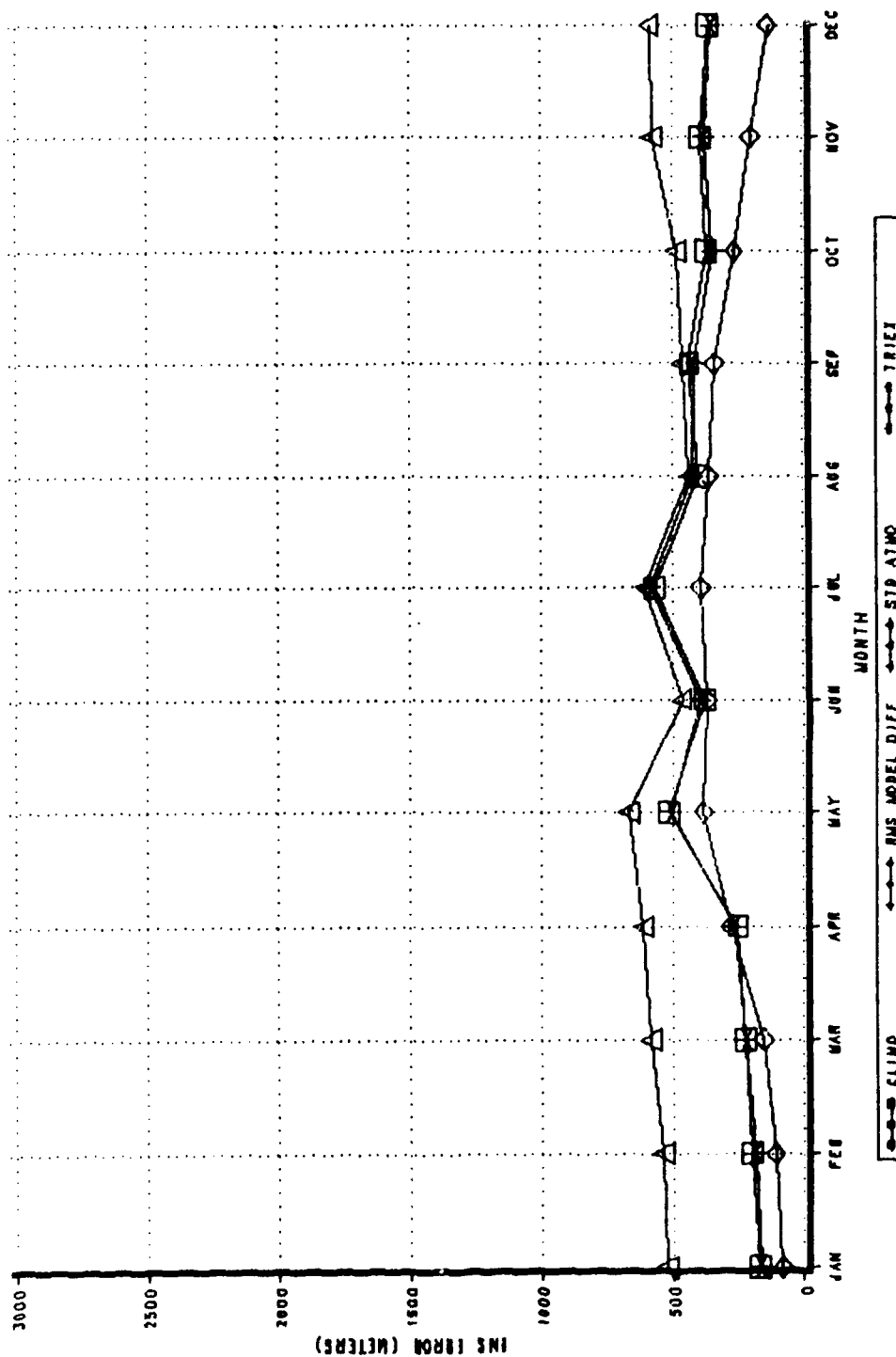


Figure 32-2

MONTHLY RMS HEIGHT ERRORS BY HOUR

Utica, NY (ALB RADOB Data)
Range=173 NM Angle=0 DEG

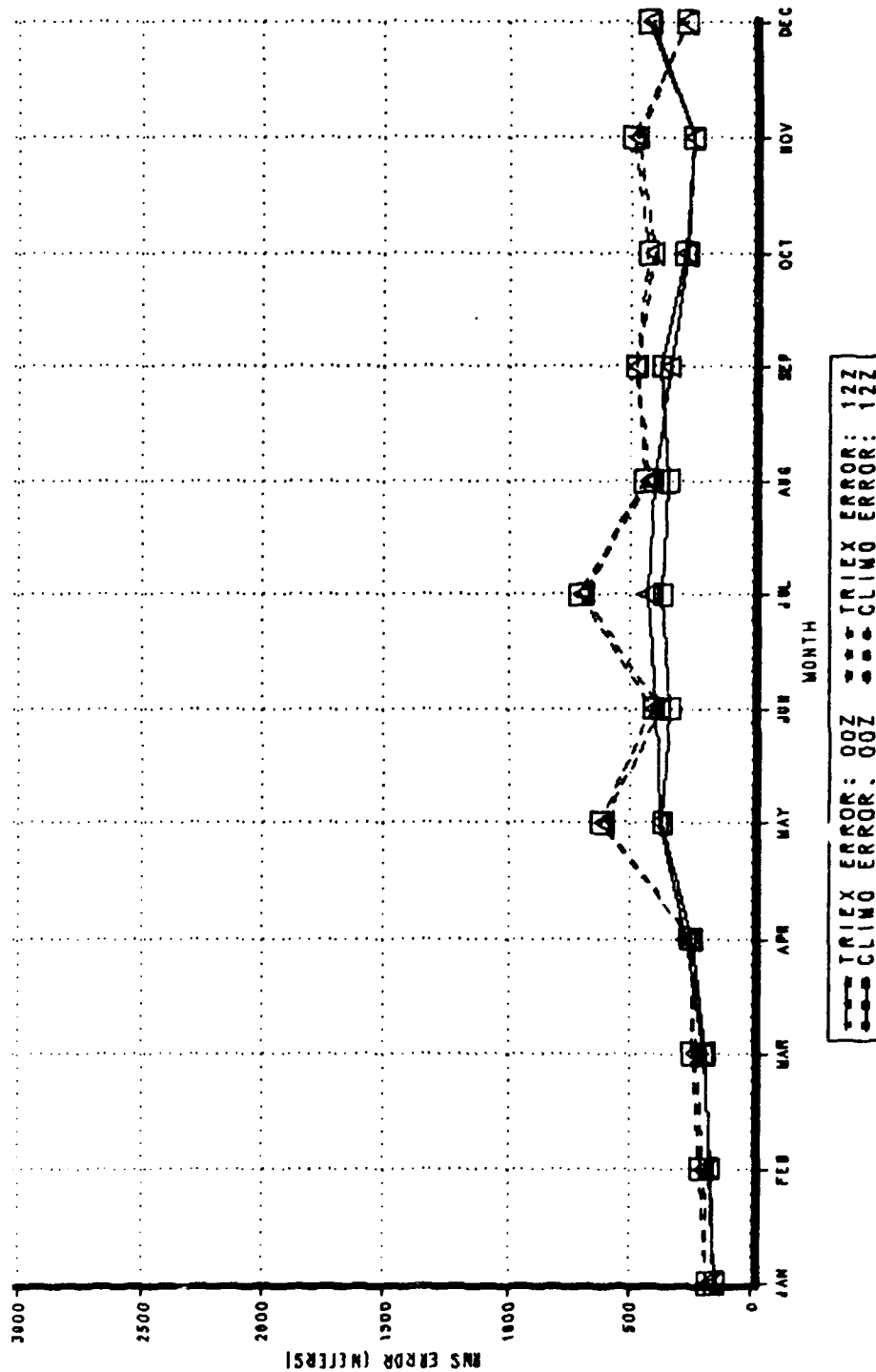


Figure 32-3

ERROR STATISTICS
 Utica, NY (ALB RAOB Data)
 Range=175 NM Angle=0 DEG

MODEL	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
TRIEXPONENTIAL	-109.99	352.50	-1536.3	6522.2
CLIMATOLOGY	49.11	367.47	-1397.0	6671.1
STANDARD ATMOSPHERE	-350.10	417.87	-1806.4	6285.2

Figure 32-4

TRIEXPONENTIAL MODEL ERRORS
 Utica, NY (ALB RAOB Data)
 Range=175 NM Angle=0 DEG

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-1500	4	0.1	4	0.1
-1000	78	1.0	82	1.1
-500	2073	27.1	2155	28.1
0	4909	64.1	7064	92.2
500	497	6.5	7561	98.7
1000	68	0.9	7629	99.6
1500	17	0.2	7646	99.8
2000	6	0.1	7652	99.9
3000	3	0.0	7655	99.9
4500	1	0.0	7656	99.9
6000	4	0.1	7660	100.0
6500	3	0.0	7663	100.0

CLIMATOLOGY ERRORS

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-1500	3	0.0	3	0.0
-1000	38	0.5	41	0.5
-500	831	10.8	872	11.4
0	5326	69.5	6198	80.9
500	1266	16.5	7464	97.4
1000	148	1.9	7612	99.3
1500	30	0.4	7642	99.7
2000	8	0.1	7650	99.8
2500	1	0.0	7651	99.8
3000	2	0.0	7653	99.9
3500	2	0.0	7655	99.9
5000	1	0.0	7656	99.9
6000	3	0.0	7659	99.9
6500	4	0.1	7663	100.0

Figure 32-5

HEIGHT ERROR DISTRIBUTION Ufco, NY (ALB RADAR Data) Range=175 NM Angle=0 DEG

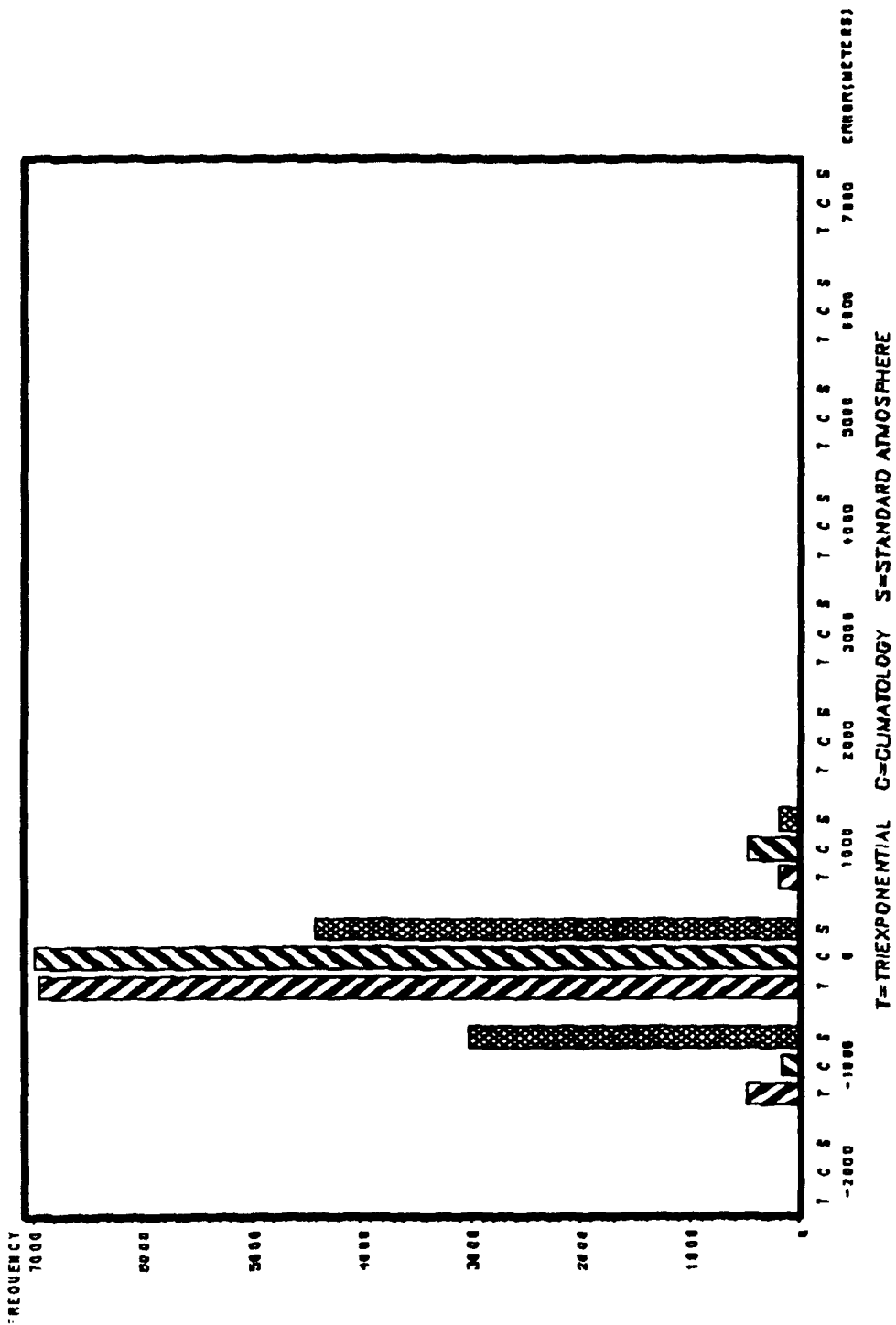


Figure 32-6

TRIEXPONENTIAL MODEL ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
-1500	0.00	0.00	0.00	0.00	0.15	0.16	0.00	0.17	0.00	0.00	0.16	0.00	
-1000	0.00	0.00	0.30	0.48	2.27	2.83	3.33	1.00	0.83	0.45	0.63	0.00	
-500	3.46	5.42	14.61	30.30	43.79	45.28	49.55	49.59	33.33	23.33	17.77	8.94	
0	90.23	89.32	8.07	66.19	48.79	44.81	38.94	38.31	50.50	65.15	71.54	82.74	
500	5.86	4.92	3.58	3.03	3.48	5.82	6.06	8.62	11.72	9.39	8.18	7.55	
1000	0.45	0.17	0.30	0.00	0.45	0.79	1.36	2.16	2.31	1.36	1.10	0.31	
1500	0.00	0.17	0.00	0.00	0.76	0.31	0.15	0.00	0.66	0.00	0.47	0.15	
2000	0.00	0.00	0.15	0.00	0.00	0.00	0.15	0.00	0.50	0.15	0.00	0.00	
3000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.17	0.00	0.00	0.15	
4500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	
6000	0.00	0.00	0.00	0.00	0.15	0.00	0.45	0.00	0.00	0.00	0.00	0.00	
6500	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.16	0.15	
Total	665	590	671	627	660	636	660	603	606	660	636	649	7663

Figure 32-7

CLIMATOLOGY ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
-1500	0.00	0.00	0.00	0.00	0.15	0.16	0.00	0.00	0.17	0.00	0.00	0.00	
-1000	0.00	0.00	0.30	0.00	0.45	1.10	1.21	1.16	1.16	0.15	0.47	0.00	
-500	2.56	3.39	4.77	7.02	13.64	20.28	23.79	21.72	16.83	7.27	5.97	3.54	
0	87.67	89.15	84.65	72.73	59.39	53.93	51.21	52.74	56.77	67.12	74.84	83.05	
500	9.47	6.44	9.39	19.62	23.33	20.75	18.33	20.73	19.31	22.12	16.35	12.33	
1000	0.30	0.68	0.60	0.64	1.82	3.30	4.39	2.99	3.96	2.88	1.26	0.46	
1500	0.00	0.34	0.15	0.00	0.45	0.31	0.45	0.50	1.16	0.15	0.94	0.31	
2000	0.00	0.00	0.15	0.00	0.15	0.16	0.15	0.00	0.50	0.15	0.00	0.00	
2500	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3000	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.15	
3500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.17	0.00	0.00	0.00	
5000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	
6000	0.00	0.00	0.00	0.00	0.00	0.00	0.45	0.00	0.00	0.00	0.00	0.00	
6500	0.00	0.00	0.00	0.00	0.30	0.00	0.00	0.00	0.00	0.00	0.16	0.15	
Total	665	590	671	627	660	636	660	603	606	660	636	649	7663

Figure 32-8

HEIGHT DISTRIBUTION

Utica, NY (ALB RAOB Data) Range=175 NM Angle=0 DEG

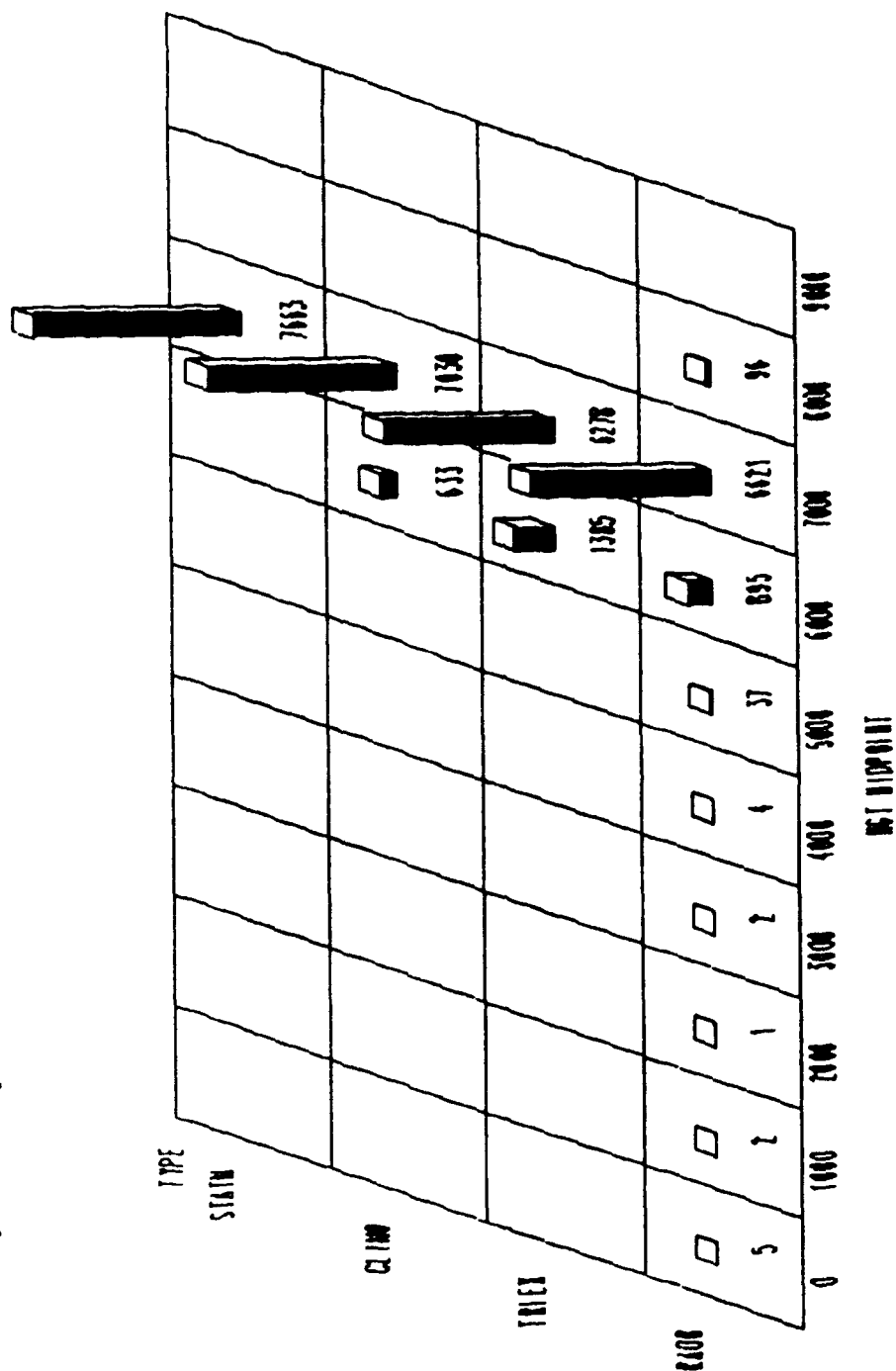


Figure 32-9

RMS ERRORS (meters) FOR
Mica Peak, WA (GEG RAOB Data)
Range=175 NM Angle=0 DEG

ENTIRE POR

TRIEXPONENTIAL	CLIMATOLOGY	STANDARD ATMOSPHERE
443	446	651

RMS HEIGHT ERRORS FROM THE TRIEXPONENTIAL MODEL
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	592	655	519
FEB	439	528	326
MAR	428	441	414
APR	197	161	228
MAY	369	424	303
JUN	261	227	291
JUL	273	209	322
AUG	257	203	301
SEP	441	198	589
OCT	624	298	828
NOV	494	483	506
DEC	641	614	666

RMS HEIGHT ERRORS FROM CLIMATOLOGY
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	570	630	500
FEB	428	516	316
MAR	433	442	425
APR	229	206	250
MAY	401	465	322
JUN	288	287	290
JUL	283	244	316
AUG	269	237	298
SEP	460	250	598
OCT	634	308	840
NOV	484	468	500
DEC	620	597	642

Figure 33-1

MONTHLY RMS HEIGHT ERRORS
 Mica Peak, WA (GEG RA08 Data) Range=175 MM Angle=0 DEG

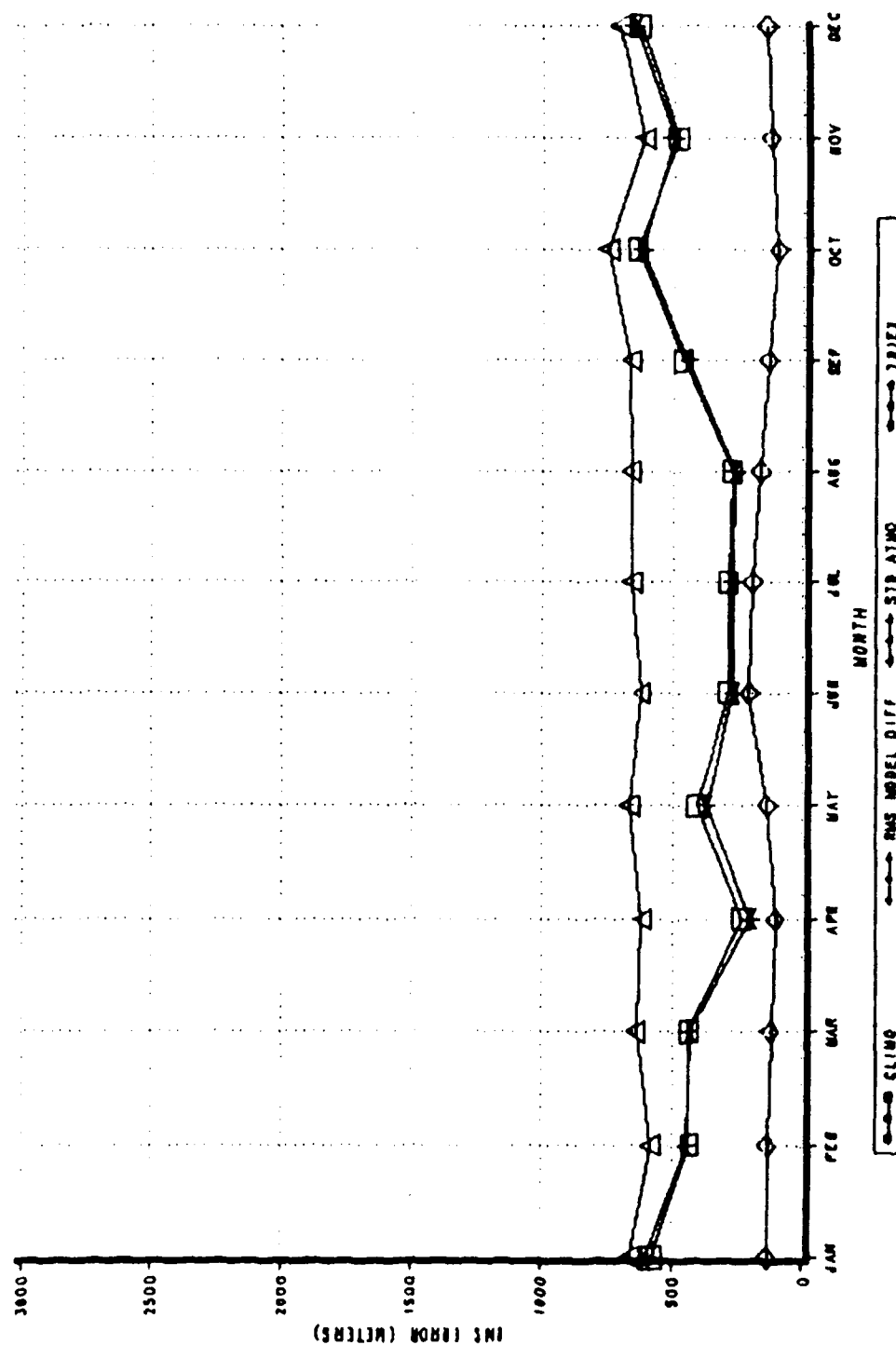


Figure 33-2

MONTHLY RMS HEIGHT ERRORS BY HOUR

Mico Peak, WA (GEO RA08 Date)
Range=175 NM Angle=0 DEG

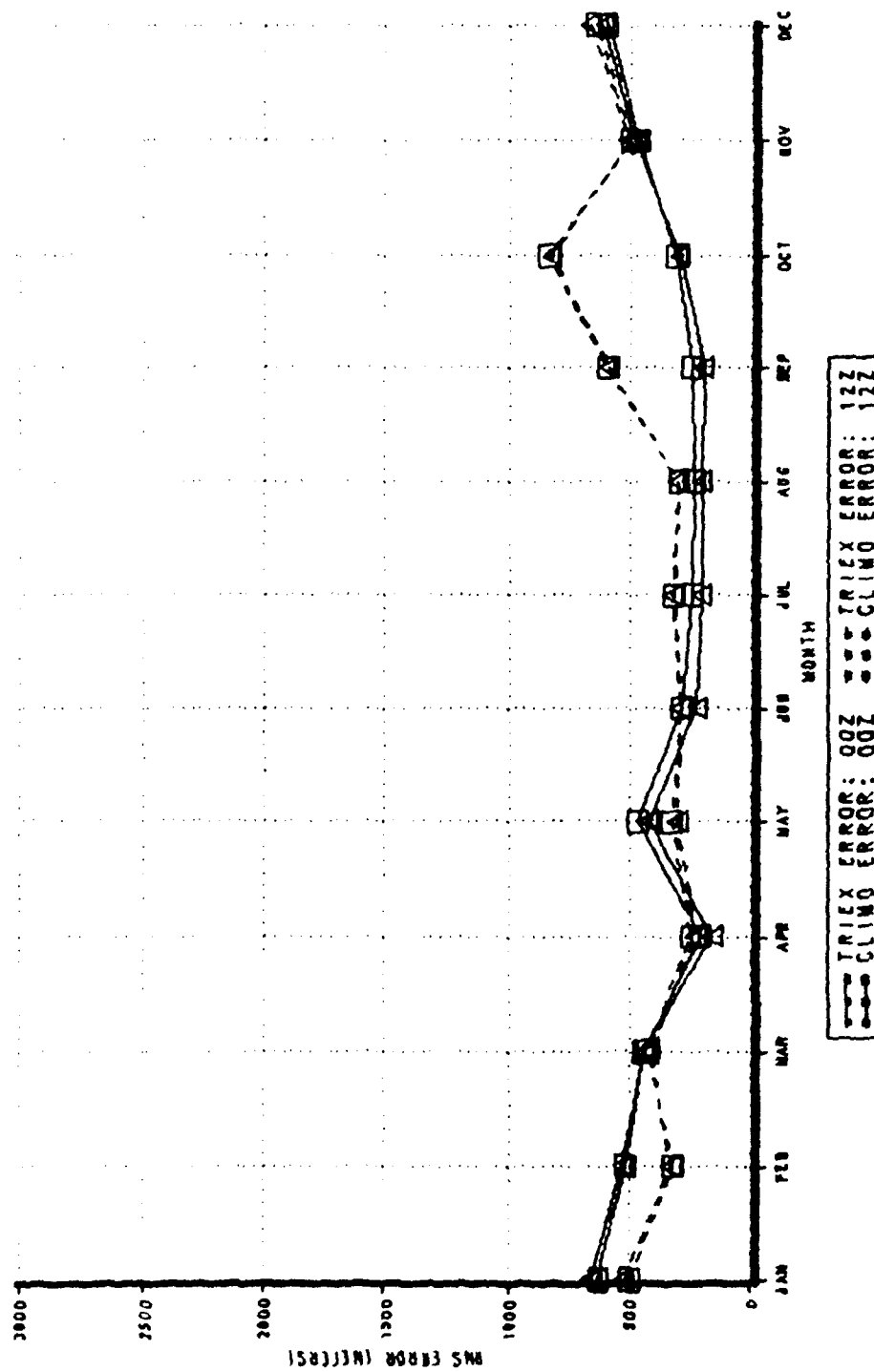


Figure 33-3

ERROR STATISTICS
Mica Peak, WA (GEG RAOB Data)
Range=175 NM Angle=0 DEG

MODEL	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
TRIEXPONENTIAL	34.93	441.49	-1372.1	6912.9
CLIMATOLOGY	40.05	443.86	-1213.7	6908.6
STANDARD ATMOSPHERE	-466.93	453.93	-1655.3	6398.1

Figure 33-4

TRIEXPONENTIAL MODEL ERRORS
Mica Peak, WA (GEG RAOB Data)
Range=175 NM Angle=0 DEG

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-1500	3	0.0	3	0.0
-1000	12	0.2	15	0.2
-500	744	9.6	759	9.8
0	6049	78.1	6808	87.8
500	768	9.9	7576	97.8
1000	113	1.5	7689	99.2
1500	26	0.3	7715	99.5
2000	6	0.1	7721	99.6
2500	3	0.0	7724	99.7
3000	2	0.0	7726	99.7
3500	2	0.0	7728	99.7
4000	2	0.0	7730	99.7
4500	1	0.0	7731	99.8
6500	8	0.1	7739	99.9
7000	11	0.1	7750	100.0

CLIMATOLOGY ERRORS

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-1000	13	0.2	13	0.2
-500	767	9.9	780	10.1
0	5833	75.3	6613	85.3
500	960	12.4	7573	97.7
1000	114	1.5	7687	99.2
1500	28	0.4	7715	99.5
2000	5	0.1	7720	99.6
2500	4	0.1	7724	99.7
3000	2	0.0	7726	99.7
3500	1	0.0	7727	99.7
4000	3	0.0	7730	99.7
4500	1	0.0	7731	99.8
6500	11	0.1	7742	99.9
7000	8	0.1	7750	100.0

Figure 33-5

HEIGHT ERROR DISTRIBUTION Mico Peak, WA (GEG RADB Data) Range=175 NM Angle=0 DEG

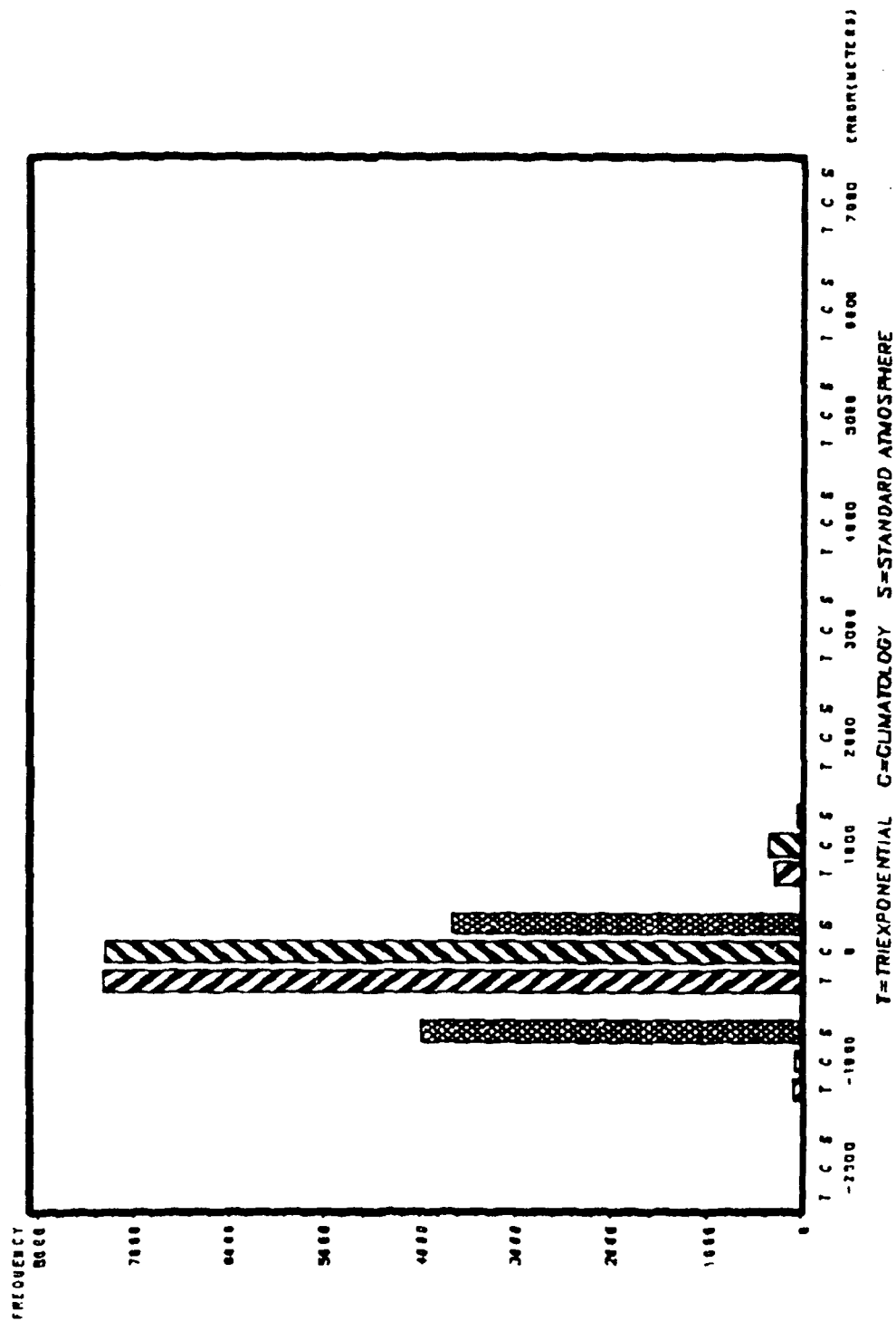


Figure 33-6

TRIEXPONENTIAL MODEL ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH													
Col	Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
-1500		0.00	0.00	0.00	0.00	0.00	0.16	0.15	0.00	0.00	0.00	0.16	0.00	
-1000		0.15	0.33	0.15	0.00	0.15	0.31	0.15	0.00	0.16	0.30	0.16	0.00	
-500		2.58	1.82	2.46	6.02	10.49	19.69	23.03	23.09	9.61	7.29	5.51	2.61	
0		73.10	80.93	87.85	87.96	82.61	72.44	72.27	71.96	81.89	74.01	74.49	77.73	
500		18.84	14.10	8.00	5.23	5.55	6.61	4.24	4.35	7.24	14.59	15.75	14.75	
1000		3.34	1.82	1.08	0.48	0.75	0.79	0.00	0.30	0.79	2.28	2.83	3.07	
1500		0.91	0.33	0.15	0.16	0.00	0.00	0.00	0.30	0.00	0.61	0.63	0.92	
2000		0.15	0.17	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.15	0.16	0.15	
2500		0.15	0.17	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3000		0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3500		0.00	0.00	0.00	0.00	0.15	0.00	0.15	0.00	0.00	0.00	0.00	0.00	
4000		0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	
4500		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	
6500		0.00	0.17	0.15	0.00	0.15	0.00	0.00	0.00	0.16	0.46	0.00	0.15	
7000		0.46	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.16	0.15	0.31	0.46	
Total		658	603	650	631	667	635	660	667	635	658	635	651	7750

Figure 33-7

CLIMATOLOGY ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR		MONTH												Total
Col	Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
-1000		0.30	0.50	0.00	0.00	0.15	0.16	0.00	0.00	0.00	0.30	0.31	0.31	
-500		8.05	10.45	11.54	3.96	7.20	9.13	12.58	15.14	7.24	10.03	12.44	10.75	
0		75.84	78.28	80.62	83.99	76.76	72.60	71.30	70.16	74.17	71.12	73.70	75.12	
500		11.40	8.13	6.62	11.09	14.09	15.75	15.30	14.09	17.32	14.59	10.24	9.68	
1000		2.43	1.66	0.77	0.48	1.20	2.05	0.61	0.00	0.79	2.58	2.36	2.76	
1500		1.06	0.33	0.15	0.32	0.15	0.31	0.00	0.60	0.16	0.30	0.47	0.46	
2000		0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.16	0.15	
2500		0.15	0.17	0.00	0.16	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3000		0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3500		0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	
4000		0.00	0.17	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.15	0.00	0.00	
4500		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	
6500		0.46	0.17	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.31	0.61	
7000		0.00	0.00	0.15	0.00	0.15	0.00	0.00	0.00	0.31	0.61	0.00	0.00	
Total		658	603	650	631	667	635	660	667	635	658	635	651	7750

Figure 33-8

HEIGHT DISTRIBUTION

Mica Peak, WA (GEG RAOB Data) Range = 175 NM Angle = 0 DEG

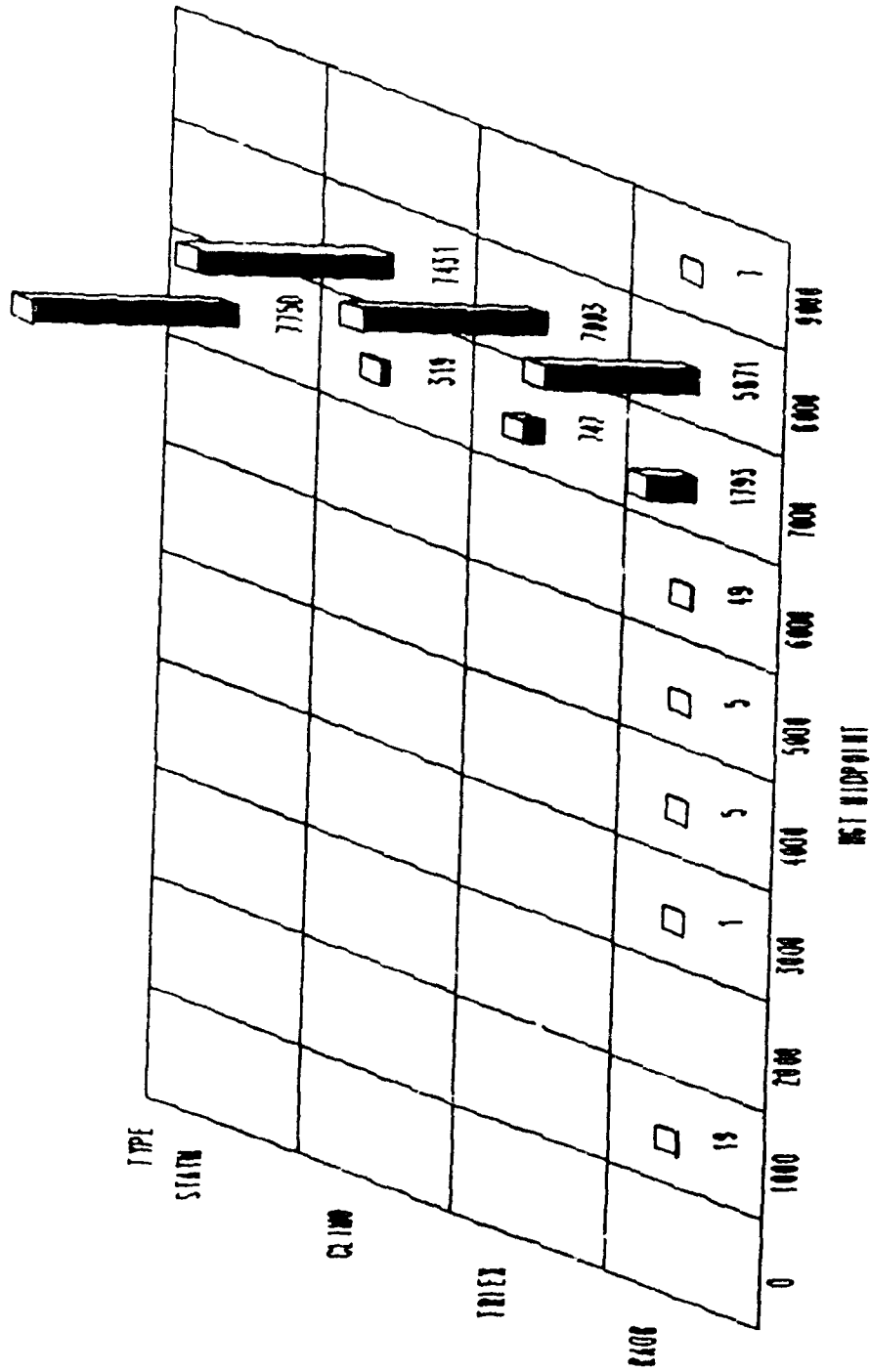


Figure 33-9

RMS ERRORS (meters) FOR
Mt Laguna, CA (SAN RAOB Data)
Range=175 NM Angle=0 DEG

ENTIRE POR

TRIEXPONENTIAL	CLIMATOLOGY	STANDARD ATMOSPHERE
792	787	793

RMS HEIGHT ERRORS FROM THE TRIEXPONENTIAL MODEL
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	591	411	731
FEB	894	849	939
MAR	902	836	964
APR	783	775	791
MAY	775	397	1023
JUN	631	553	699
JUL	659	611	704
AUG	859	724	976
SEP	906	784	1014
OCT	868	713	999
NOV	828	691	950
DEC	741	730	753

RMS HEIGHT ERRORS FROM CLIMATOLOGY
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	612	436	750
FEB	921	881	961
MAR	915	853	975
APR	786	777	794
MAY	762	331	1026
JUN	530	475	579
JUL	575	559	589
AUG	854	698	986
SEP	887	763	998
OCT	881	711	1023
NOV	851	700	985
DEC	758	750	765

Figure 34-1

MONTHLY RMS HEIGHT ERRORS
 Mt Laguna, CA (SAN RADAR Data) Range=175 NM Angle=0 DEG

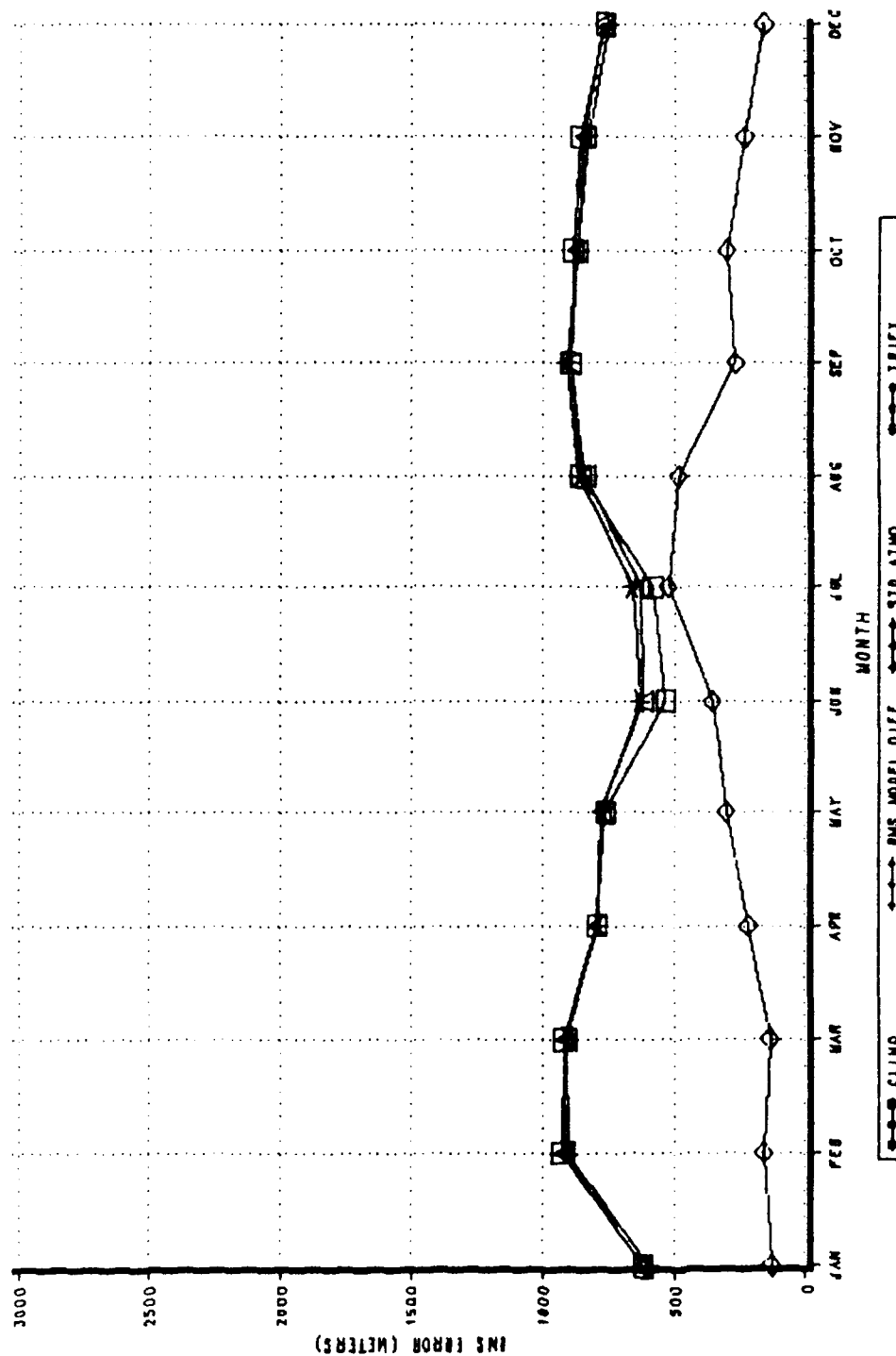


Figure 34-2

MONTHLY RMS HEIGHT ERRORS BY HOUR

Mt Laguna, CA (SAN RA08 Data)
Range=175 NM Angle=0 DEG

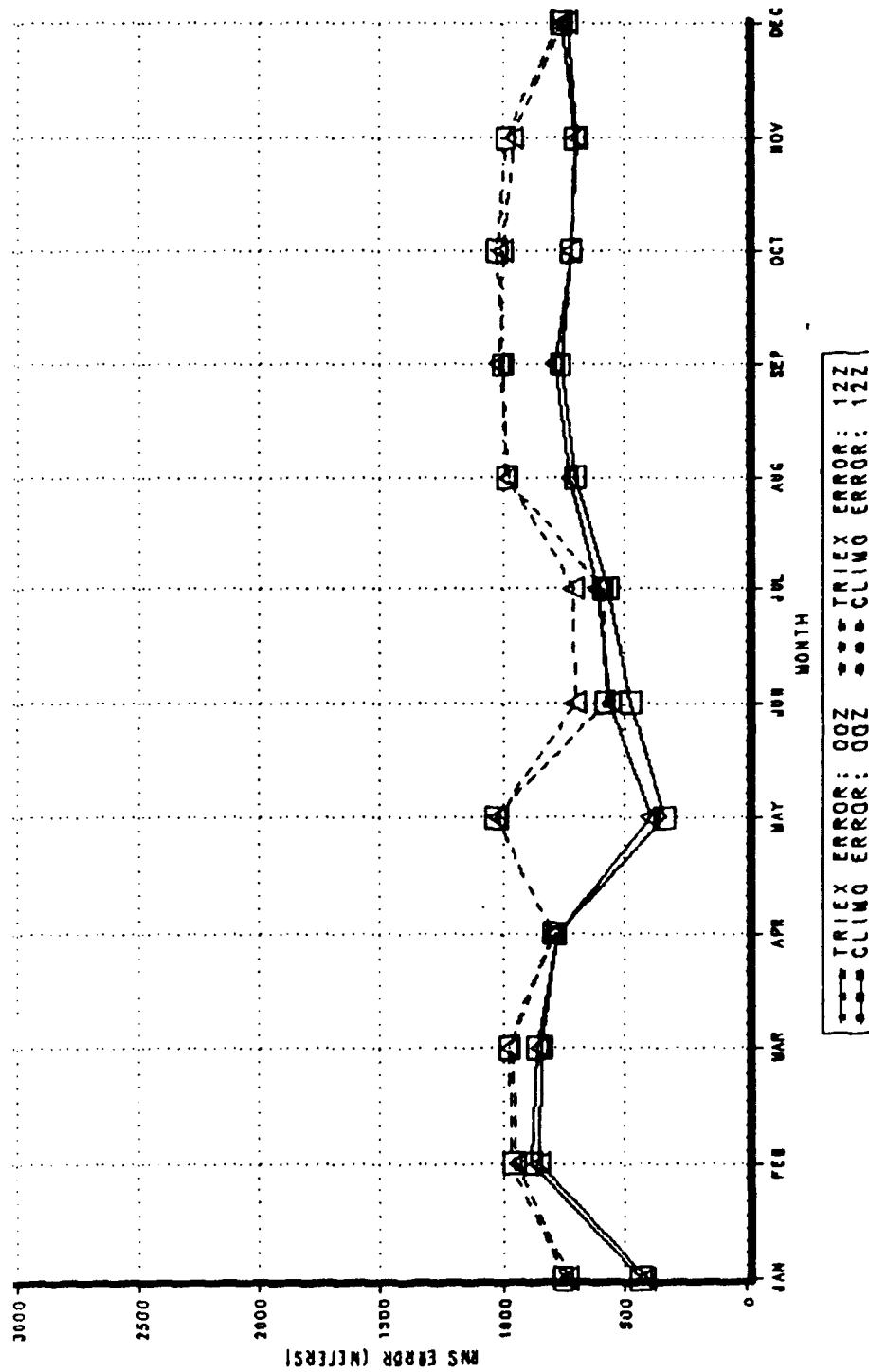


Figure 34-3

ERROR STATISTICS
Mt Laguna, CA (SAN RAOB Data)
Range=175 NM Angle=0 DEG

MODEL	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
TRIEXPONENTIAL	-118.63	783.59	-1544.0	7077.9
CLIMATOLOGY	115.64	778.79	-1157.9	7243.8
STANDARD ATMOSPHERE	-148.30	778.56	-1396.6	6899.1

Figure 34-4

TRIEXPONENTIAL MODEL ERRORS
Mt Laguna, CA (SAN RAOB Data)
Range=175 NM Angle=0 DEG

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-1500	10	0.1	10	0.1
-1000	237	3.1	247	3.2
-500	3596	46.7	3843	49.9
0	3007	39.1	6850	89.0
500	547	7.1	7397	96.1
1000	136	1.8	7533	97.8
1500	50	0.6	7583	98.5
2000	21	0.3	7604	98.8
2500	10	0.1	7614	98.9
3000	6	0.1	7620	99.0
3500	4	0.1	7624	99.0
4000	4	0.1	7628	99.1
5000	2	0.0	7630	99.1
6500	45	0.6	7675	99.7
7000	25	0.3	7700	100.0

CLIMATOLOGY ERRORS

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-1000	31	0.4	31	0.4
-500	1103	14.3	1134	14.7
0	4979	64.7	6113	79.4
500	1139	14.8	7252	94.2
1000	245	3.2	7497	97.4
1500	67	0.9	7564	98.2
2000	33	0.4	7597	98.7
2500	14	0.2	7611	98.8
3000	7	0.1	7618	98.9
3500	5	0.1	7623	99.0
4000	3	0.0	7626	99.0
4500	2	0.0	7628	99.1
5500	2	0.0	7630	99.1
6500	3	0.0	7633	99.1
7000	67	0.9	7700	100.0

Figure 34-5

HEIGHT ERROR DISTRIBUTION M8 Laguna, CA (SAN RAFAEL Data) Range=175 NM Angle=0 DEG

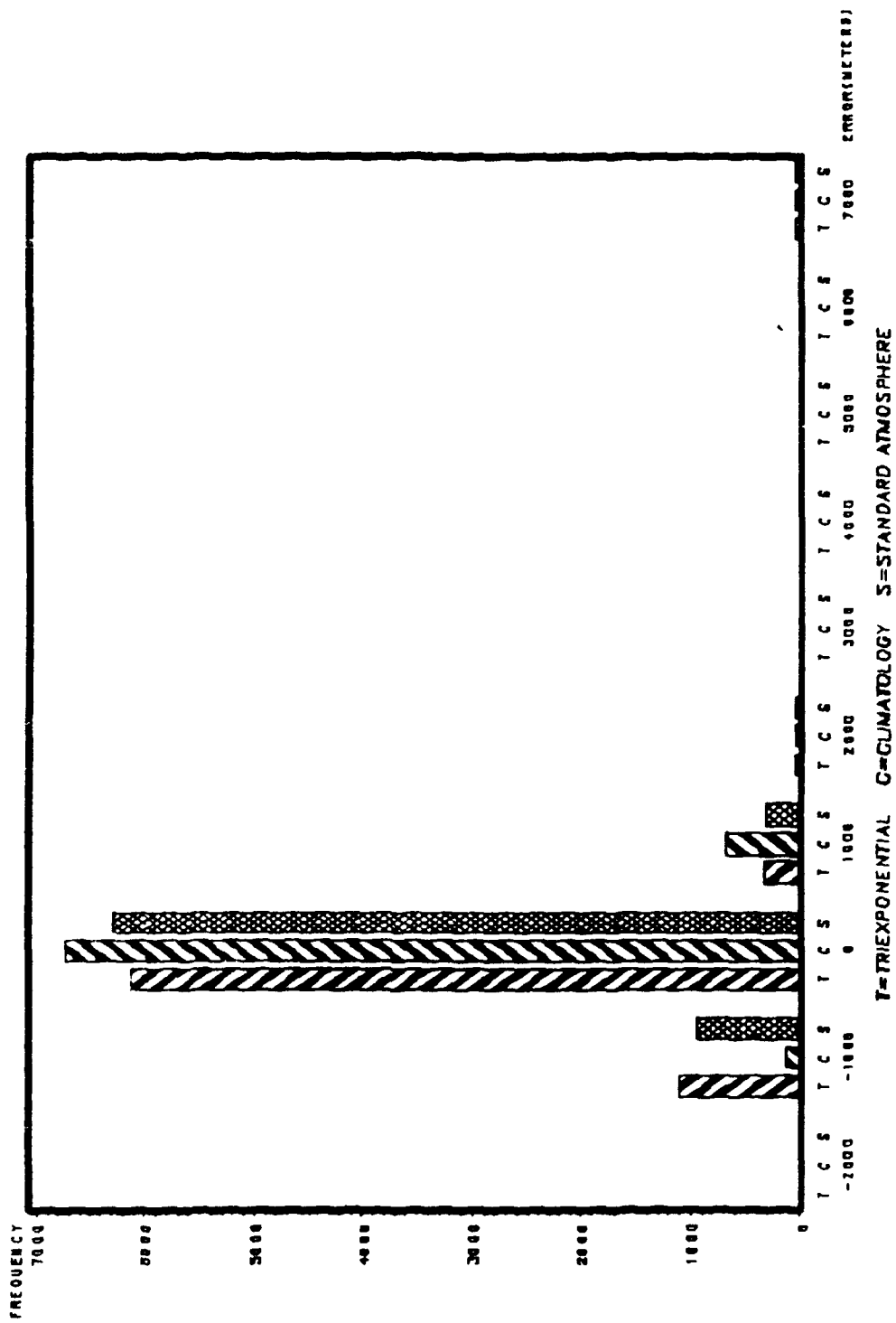


Figure 34-6

TRIEXPONENTIAL MODEL ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												Total
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
-1500	0.00	0.17	0.00	0.00	0.00	0.00	0.61	0.15	0.47	0.15	0.00	0.00	
-1000	0.92	0.17	0.92	0.64	1.06	2.51	9.13	10.49	5.93	2.57	1.13	0.92	
-500	24.92	33.45	32.92	45.30	59.06	75.39	62.71	57.60	53.98	47.28	35.48	30.51	
0	58.15	52.56	48.00	41.15	31.12	19.44	22.07	22.49	29.02	39.58	48.87	58.09	
500	10.62	9.22	12.00	8.77	5.14	1.57	4.11	5.02	6.55	5.44	10.65	6.63	
1000	2.77	1.88	2.92	1.75	1.66	0.16	0.30	2.43	1.87	1.81	1.29	2.31	
1500	1.23	0.34	1.08	0.80	0.60	0.31	0.46	0.30	0.31	0.91	0.97	0.46	
2000	0.46	0.17	0.62	0.48	0.30	0.00	0.00	0.30	0.16	0.45	0.32	0.00	
2500	0.31	0.17	0.00	0.16	0.00	0.16	0.00	0.00	0.16	0.45	0.00	0.15	
3000	0.15	0.17	0.00	0.00	0.15	0.00	0.15	0.15	0.16	0.00	0.00	0.00	
3500	0.00	0.17	0.15	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.16	0.00	
4000	0.15	0.17	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.15	0.00	0.00	
5000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.15	0.00	0.00	
6500	0.15	0.85	0.92	0.32	0.30	0.31	0.30	0.91	1.25	0.91	0.48	0.31	
7000	0.15	0.51	0.46	0.64	0.60	0.16	0.00	0.00	0.00	0.15	0.65	0.62	
Total	650	586	650	627	662	638	657	658	641	662	620	649	7700

Figure 34-7

CLIMATOLOGY ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												Total
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
-1000	0.62	0.17	0.15	0.00	0.30	0.16	0.46	0.61	1.25	0.45	0.48	0.15	
-500	20.31	9.39	20.31	8.13	8.61	6.90	8.68	25.23	31.20	9.21	12.42	10.94	
0	55.23	68.77	56.00	72.57	74.02	83.86	63.77	50.46	48.83	69.18	64.19	69.80	
500	17.38	15.87	16.92	13.40	12.24	7.99	21.77	15.05	12.64	14.20	15.81	14.18	
1000	2.92	2.56	3.23	2.87	2.72	0.00	4.11	5.32	3.43	3.63	4.35	2.93	
1500	2.00	0.85	1.08	1.28	0.60	0.47	0.30	1.06	0.62	0.60	0.81	0.77	
2000	0.31	0.34	0.77	0.64	0.45	0.00	0.30	0.61	0.31	0.76	0.48	0.15	
2500	0.62	0.17	0.00	0.16	0.00	0.16	0.00	0.46	0.16	0.30	0.16	0.00	
3000	0.15	0.17	0.00	0.00	0.00	0.00	0.00	0.15	0.16	0.30	0.00	0.15	
3500	0.00	0.17	0.15	0.00	0.15	0.00	0.15	0.00	0.00	0.00	0.16	0.00	
4000	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.15	0.00	0.00	
4500	0.00	0.17	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	
5500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.15	0.00	0.00	
6500	0.00	0.00	0.15	0.00	0.00	0.16	0.00	0.15	0.00	0.00	0.00	0.00	
7000	0.31	1.37	1.23	0.96	0.91	0.31	0.30	0.76	1.25	1.06	1.13	0.92	
Total	650	586	650	627	662	638	657	658	641	662	620	649	7700

Figure 34-8

HEIGHT DISTRIBUTION

Mt Laguna, CA (SAN PAOB Data) Range = 175 NM Angle = 0 DEG

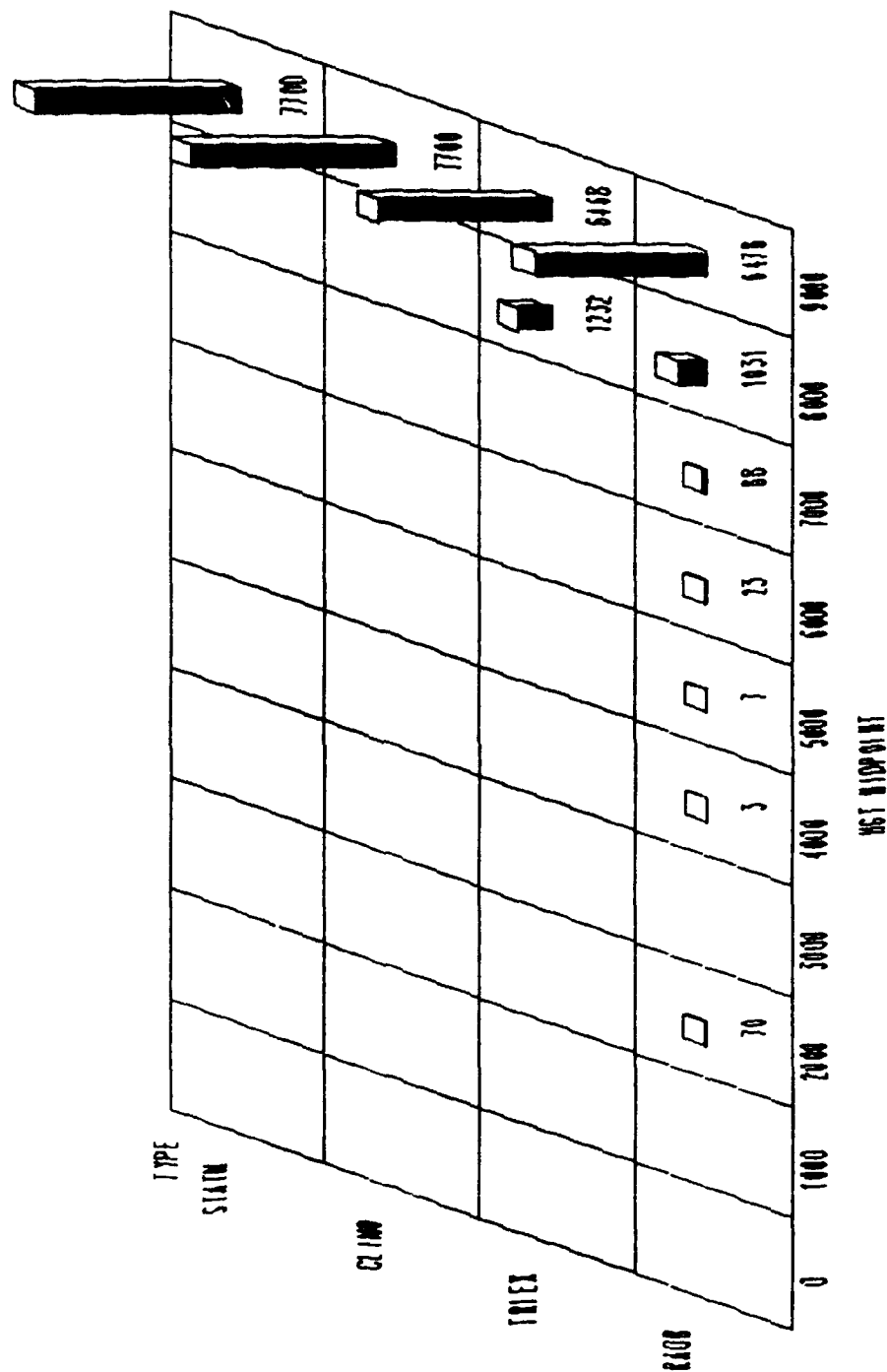


Figure 34-9

RMS ERRORS (meters) FOR
Malmstrom, MT (GTF RAOB Data)
Range=175 NM Angle=0 DEG

ENTIRE FOR

TRIEXPONENTIAL	CLIMATOLOGY	STANDARD ATMOSPHERE
2281	2053	2092

RMS HEIGHT ERRORS FROM THE TRIEXPONENTIAL MODEL
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	2116	1973	2248
FEB	2189	2000	2361
MAR	2405	2034	2720
APR	2020	1534	2408
MAY	2251	1826	2613
JUN	2263	1615	2764
JUL	2520	1791	3079
AUG	2302	1684	2785
SEP	2539	1928	3043
OCT	2570	1927	3084
NOV	1900	1562	2190
DEC	2171	1982	2339

RMS HEIGHT ERRORS FROM CLIMATOLOGY
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	1863	1781	1941
FEB	2023	1867	2167
MAR	2197	1959	2409
APR	1851	1499	2146
MAY	2112	1856	2343
JUN	2005	1658	2301
JUL	2205	1837	2518
AUG	2109	1735	2426
SEP	2237	1888	2547
OCT	2240	1889	2544
NOV	1769	1492	2012
DEC	1947	1816	2066

Figure 35-1

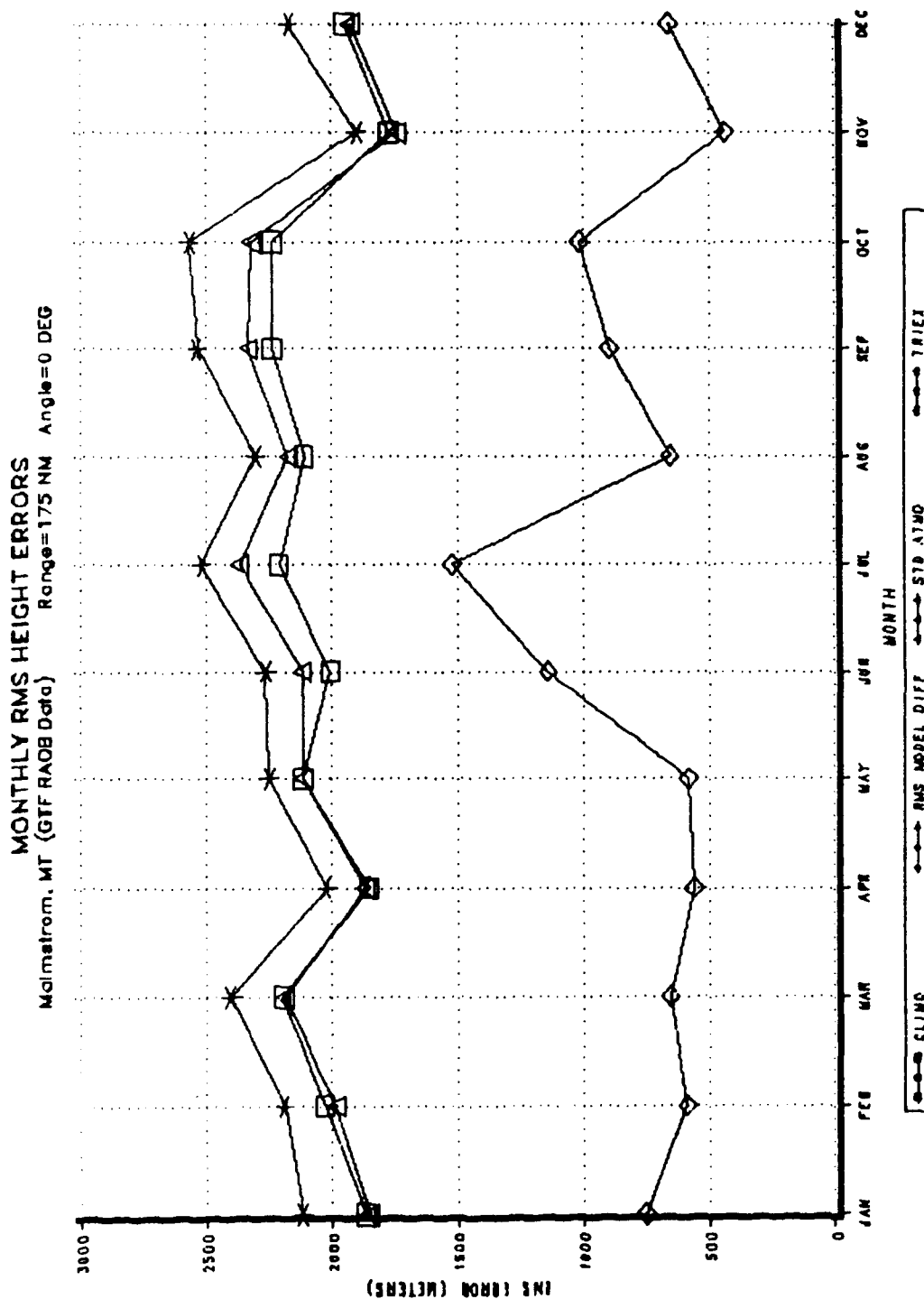


Figure 35-2

MONTHLY RMS HEIGHT ERRORS BY HOUR

Malmstrom, MT (GTF RAD8 Data)
Range=173 NM Angle=0 DEG

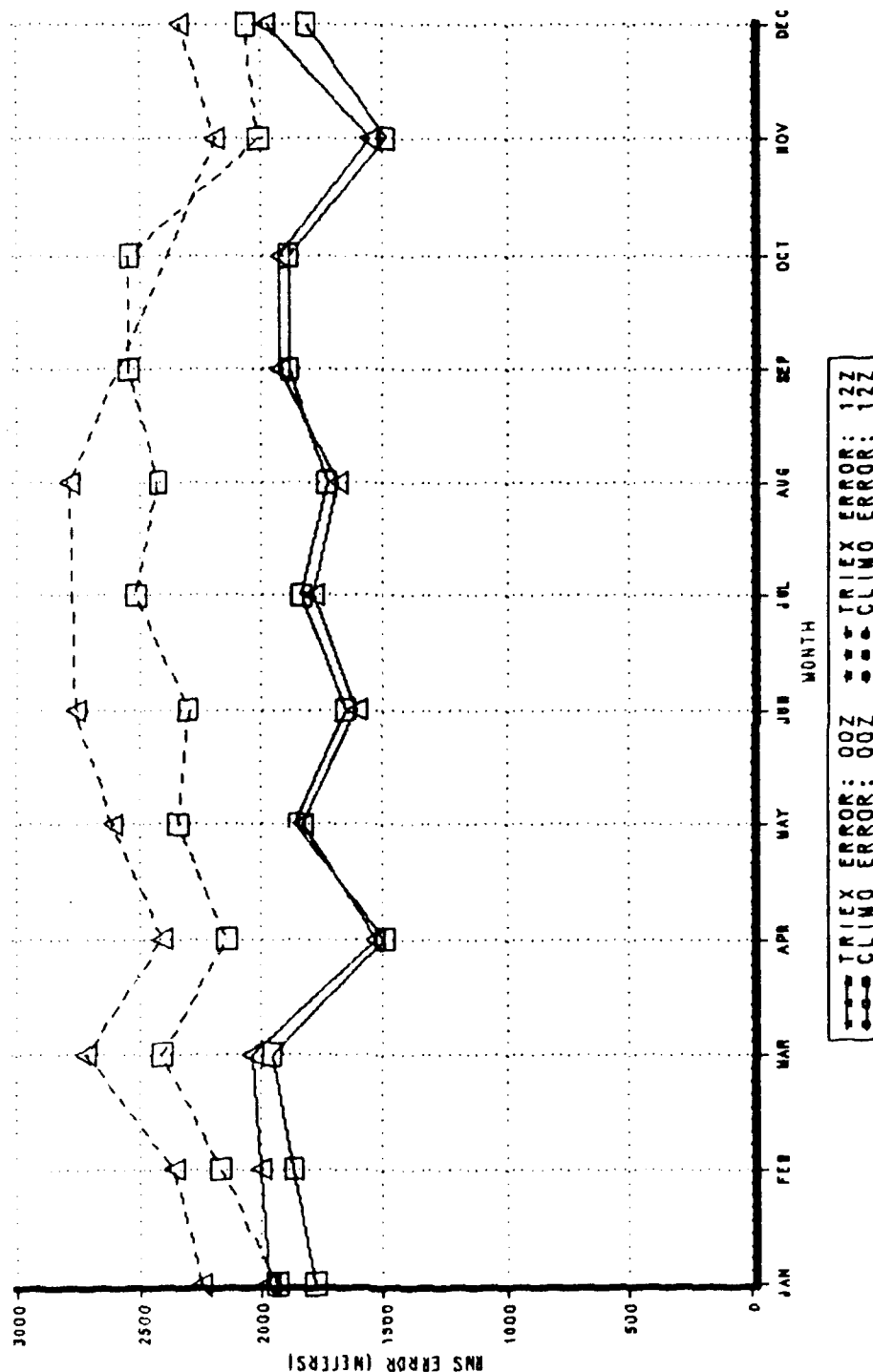


Figure 35-3

ERROR STATISTICS
Malmstrom, MT (GTF RAOB Data)
Range=175 NM Angle=0 DEG

MODEL	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
TRIEXPONENTIAL	1022.56	2038.64	-2165.4	6965.9
CLIMATOLOGY	346.86	2023.93	-4956.4	6596.6
STANDARD ATMOSPHERE	254.15	2076.50	-3374.7	5962.1

Figure 35-4

TRIEXPONENTIAL MODEL ERRORS
Malmstrom, MT (GTF RAOB Data)
Range=175 NM Angle=0 DEG

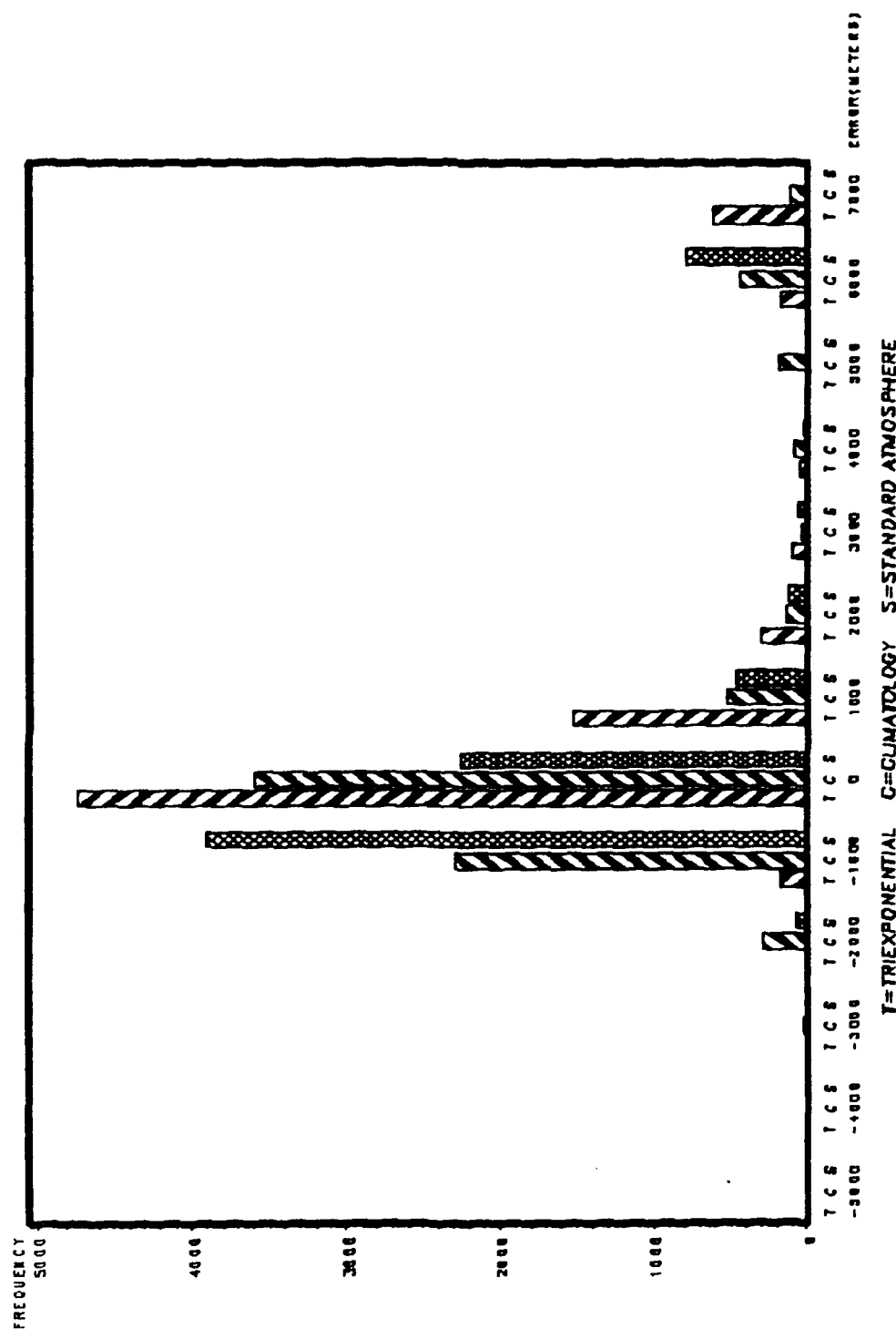
ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-2000	5	0.1	5	0.1
-1500	11	0.1	16	0.2
-1000	55	0.7	71	0.9
-500	566	7.3	637	8.3
0	3224	41.8	3861	50.1
500	1720	22.3	5581	72.4
1000	680	8.8	6261	81.2
1500	295	3.8	6556	85.0
2000	150	1.9	6706	86.9
2500	77	1.0	6783	87.9
3000	45	0.6	6828	88.5
3500	32	0.4	6860	88.9
4000	21	0.3	6881	89.2
4500	18	0.2	6899	89.4
5000	14	0.2	6913	89.6
5500	4	0.1	6917	89.7
6000	33	0.4	6950	90.1
6500	462	6.0	7412	96.1
7000	301	3.9	7713	100.0

CLIMATOLOGY ERRORS

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-5000	1	0.0	1	0.0
-4000	1	0.0	2	0.0
-3500	3	0.0	5	0.1
-3000	7	0.1	12	0.2
-2500	52	0.7	64	0.8
-2000	122	1.6	186	2.4
-1500	317	4.1	503	6.5
-1000	849	11.0	1352	17.5
-500	2793	36.2	4145	53.7
0	1701	22.1	5846	75.8
500	545	7.1	6391	82.9
1000	243	3.2	6634	86.0
1500	103	1.3	6737	87.3
2000	83	1.1	6820	88.4
2500	30	0.4	6850	88.8
3000	21	0.3	6871	89.1
3500	20	0.3	6891	89.3
4000	10	0.1	6901	89.5
4500	72	0.9	6973	90.4
5000	57	0.7	7030	91.1
5500	175	2.3	7205	93.4
6000	242	3.1	7447	96.6
6500	266	3.4	7713	100.0

Figure 35-5

Malmastron, MT (GTF RAOB Data) Range=175 NM Angle=0 DEG



T=TRIEXPONENTIAL C=CLIMATOLOGY S=STANDARD ATMOSPHERE

TRIEXPONENTIAL MODEL ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
-2000	0.00	0.00	0.00	0.00	0.30	0.00	0.15	0.00	0.16	0.00	0.16	0.00	
-1500	0.00	0.00	0.00	0.16	0.61	0.00	0.00	0.15	0.47	0.15	0.16	0.00	
-1000	0.30	0.50	0.16	0.16	1.06	0.63	1.98	1.97	0.47	0.30	0.63	0.31	
-500	1.21	1.99	3.62	5.46	13.01	10.95	16.31	18.06	7.57	5.46	2.36	1.72	
0	36.42	46.01	49.92	48.36	41.15	39.21	33.69	37.33	40.06	44.56	47.72	37.87	
500	29.74	26.74	20.31	24.18	18.15	18.41	15.24	13.96	21.29	19.94	28.35	31.92	
1000	14.57	9.30	7.87	7.80	6.96	8.41	8.23	7.74	7.89	8.31	7.87	10.80	
1500	3.64	3.82	2.83	2.81	3.78	5.71	4.42	4.70	4.10	3.32	2.20	4.54	
2000	2.12	0.83	2.05	1.72	2.57	1.43	2.44	1.97	2.21	2.42	2.05	1.41	
2500	1.67	0.50	0.79	0.31	0.76	2.38	1.22	1.06	0.63	1.06	0.63	0.94	
3000	1.21	0.17	0.00	0.47	0.15	0.63	1.07	0.76	0.32	1.21	0.47	0.47	
3500	0.61	0.17	0.16	0.16	0.30	0.79	1.07	0.46	0.63	0.15	0.16	0.31	
4000	0.15	0.00	0.31	0.16	0.30	0.63	0.46	0.00	0.32	0.15	0.16	0.63	
4500	0.15	0.17	0.00	0.16	0.30	0.32	0.46	0.76	0.47	0.00	0.00	0.00	
5000	0.15	0.17	0.16	0.16	0.61	0.32	0.15	0.30	0.00	0.00	0.16	0.00	
5500	0.00	0.17	0.16	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.16	
6000	0.00	0.00	0.16	0.00	0.61	1.27	1.83	0.91	0.00	0.00	0.00	0.31	
6500	0.61	2.82	5.35	3.59	7.72	8.25	10.21	8.65	12.62	7.85	2.36	1.56	
7000	7.44	6.64	6.14	4.37	1.66	0.63	1.07	1.06	0.79	5.59	4.57	7.04	
Total	659	602	635	641	661	630	656	659	634	662	635	639	7713

Figure 35-7

CLIMATOLOGY ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH													
Col	Row	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
-5000		0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	
-4000		0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	
-3500		0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.00	0.00	0.15	0.00	0.00	
-3000		0.00	0.00	0.00	0.00	0.00	0.00	0.61	0.15	0.32	0.00	0.00	0.00	
-2500		0.00	0.00	0.00	0.00	0.45	0.63	6.40	0.00	0.16	0.15	0.16	0.00	
-2000		0.10	0.13	0.00	0.00	0.45	4.13	11.28	0.46	0.32	1.06	0.31	0.16	
-1500		0.15	0.17	0.47	0.62	2.72	14.92	8.99	3.79	5.52	11.18	0.31	0.16	
-1000		11.05	9.14	11.81	8.89	11.62	12.22	8.23	14.87	18.14	13.60	1.73	6.42	
-500		41.12	44.68	49.92	42.43	32.22	25.40	22.71	32.47	17.07	22.96	38.90	46.01	
0		21.09	22.43	15.91	27.30	23.30	19.05	14.63	19.73	14.83	27.19	36.22	23.00	
500		9.10	8.64	5.20	7.02	8.02	5.87	6.55	8.65	4.73	4.38	8.98	7.67	
1000		2.12	2.82	1.73	3.43	4.99	3.33	2.90	4.10	3.00	2.42	2.68	4.23	
1500		1.67	1.00	1.57	0.62	1.16	0.79	1.52	1.67	0.63	1.96	2.20	0.94	
2000		2.12	0.50	0.94	0.94	0.91	1.75	1.07	1.37	0.47	0.91	0.63	1.25	
2500		0.46	0.17	0.00	0.16	0.45	0.48	0.61	0.61	0.47	0.45	0.47	0.31	
3000		0.10	0.17	0.16	0.16	0.45	0.16	0.30	0.15	0.63	0.15	0.16	0.47	
3500		0.30	0.30	0.31	0.31	0.15	0.32	0.46	0.46	0.32	0.00	0.16	0.31	
4000		0.00	0.17	0.16	0.00	0.15	0.48	0.15	0.46	0.00	0.00	0.00	0.00	
4500		0.15	0.17	0.00	0.16	0.61	0.00	9.60	0.15	0.00	0.00	0.16	0.00	
5000		0.00	0.17	0.16	0.00	0.00	7.94	0.00	0.10	0.00	0.15	0.00	0.31	
5500		0.00	0.00	0.00	0.00	0.15	0.00	0.00	7.74	9.31	9.52	0.00	0.16	
6000		8.04	1.99	7.56	5.62	6.81	0.16	0.00	0.00	0.16	0.00	0.16	5.16	
6500		0.00	5.48	4.09	2.14	3.18	2.18	3.15	2.88	3.94	3.78	6.77	3.44	
Total		659	602	615	641	661	610	656	659	634	662	635	639	7713

Figure 35-8

HEIGHT DISTRIBUTION

Malmstrom, MT (GTF RAOB Data) Range = 175 NM Angle = 0 DEG

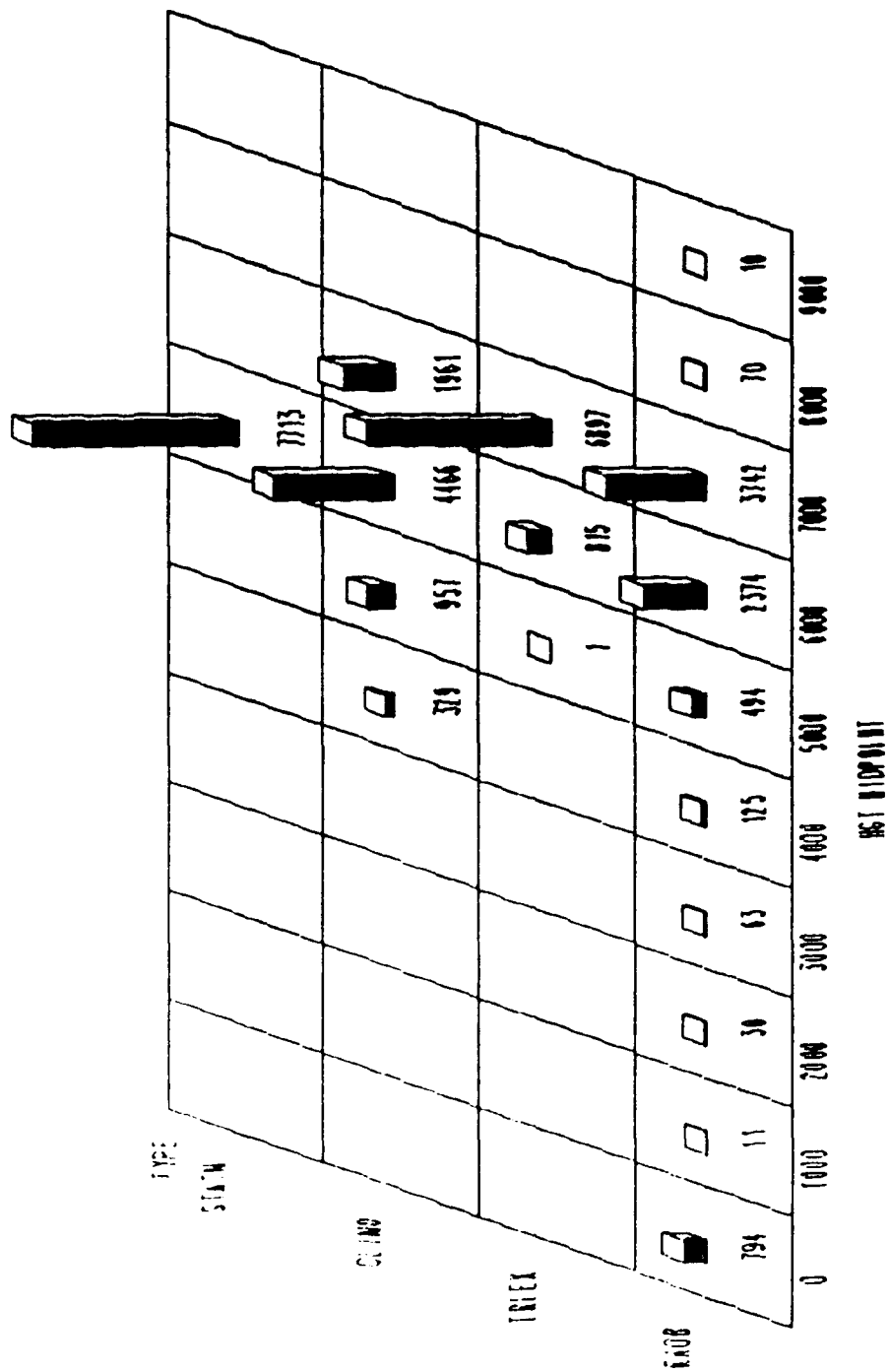


Figure 35-9

RMS ERRORS (meters) FOR
Patrick, FL (PBI RAOB Data)
Range=175 NM Angle=0 DEG

ENTIRE FOR

TRIEXPONENTIAL	CLIMATOLOGY	STANDARD ATMOSPHERE
1397	1384	1388

RMS HEIGHT ERRORS FROM THE TRIEXPONENTIAL MODEL
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	1441	1078	1726
FEB	1592	1477	1700
MAR	1376	957	1692
APR	1467	1107	1748
MAY	1409	1395	1423
JUN	1447	1450	1445
JUL	1493	1557	1428
AUG	1384	1458	1306
SEP	1270	1332	1206
OCT	1305	1422	1179
NOV	1384	1449	1316
DEC	1197	1024	1349

RMS HEIGHT ERRORS FROM CLIMATOLOGY
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	1446	1070	1740
FEB	1685	1565	1799
MAR	1393	1022	1683
APR	1501	1135	1787
MAY	1479	1513	1444
JUN	1426	1452	1400
JUL	1536	1637	1431
AUG	1248	1373	1112
SEP	1115	1219	1001
OCT	1227	1384	1050
NOV	1346	1425	1263
DEC	1153	994	1293

Figure 36-1

MONTHLY RMS HEIGHT ERRORS
 Point, FL (PBI RADOB Data) Range=175 NM Angle=0 DEG

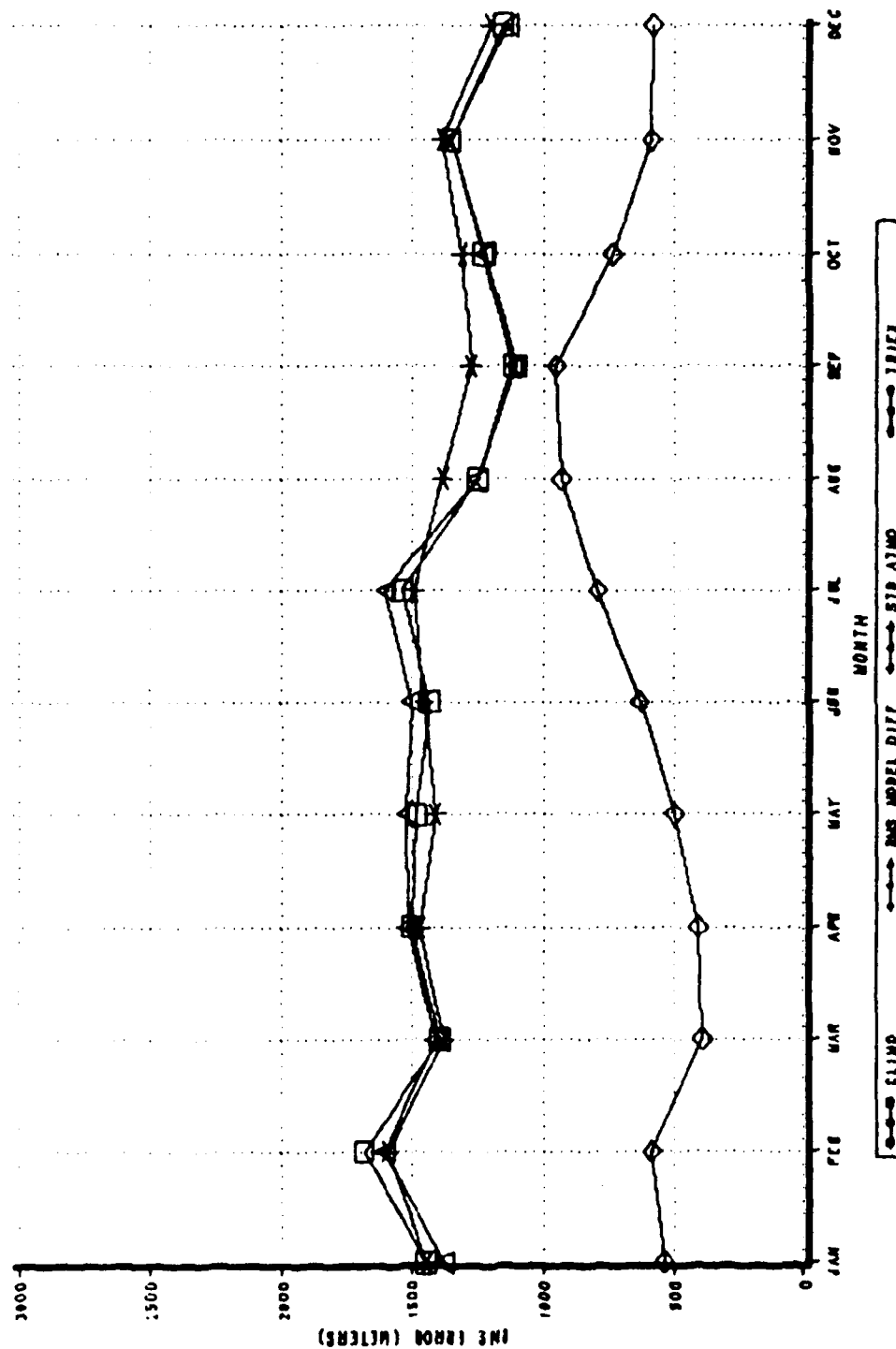


Figure 36-2

MONTHLY RMS HEIGHT ERRORS BY HOUR

Patrick, FL (PBI RAOB Data)
Range=175 NM Angle=0 DEG

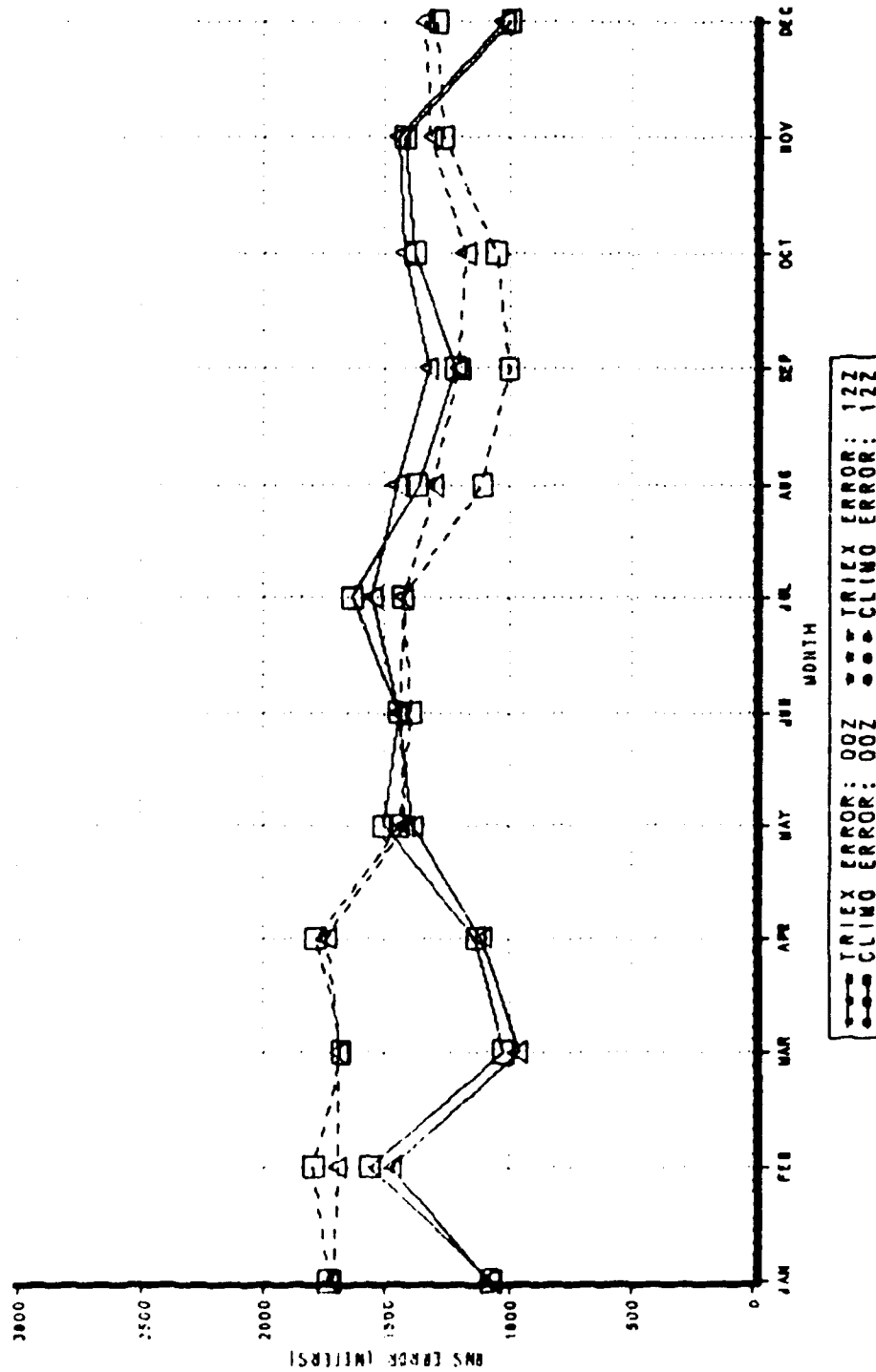


Figure 36-3

ERROR STATISTICS
Patrick, FL (PBI RAOB Data)
Range=175 NM Angle=0 DEG

MODEL	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
TRIEXPONENTIAL	-234.96	1377.47	-2947.3	6451.0
CLIMATOLOGY	309.21	1349.04	-3770.8	6348.2
STANDARD ATMOSPHERE	306.51	1353.57	-3754.6	5968.2

Figure 36-4

TRIEXPONENTIAL MODEL ERRORS
Patrick, FL (PBI RAOB Data)
Range=175 NM Angle=0 DEG

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-3000	4	0.1	4	0.1
-2500	3	0.0	7	0.1
-2000	88	1.1	95	1.2
-1500	747	9.7	842	10.9
-1000	1961	25.5	2803	36.4
-500	2266	29.5	5069	65.9
0	1333	17.3	6402	83.2
500	536	7.0	6938	90.2
1000	247	3.2	7185	93.4
1500	90	1.2	7275	94.6
2000	42	0.5	7317	95.1
2500	24	0.3	7341	95.4
3000	23	0.3	7364	95.7
3500	12	0.2	7376	95.9
4000	13	0.2	7389	96.1
4500	8	0.1	7397	96.2
5000	117	1.5	7514	97.7
5500	83	1.1	7597	98.8
6000	79	1.0	7676	99.8
6500	15	0.2	7691	100.0

CLIMATOLOGY ERRORS

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-4000	1	0.0	1	0.0
-3500	1	0.0	2	0.0
-3000	4	0.1	6	0.1
-2500	3	0.0	9	0.1
-2000	8	0.1	17	0.2
-1500	67	0.9	84	1.1
-1000	492	6.4	576	7.5
-500	1883	24.5	2459	32.0
0	2519	32.8	4978	64.7
500	1420	18.5	6398	83.2
1000	552	7.2	6950	90.4
1500	233	3.0	7183	93.4
2000	98	1.3	7281	94.7
2500	37	0.5	7318	95.2
3000	20	0.3	7338	95.4
3500	26	0.3	7364	95.7
4000	13	0.2	7377	95.9
4500	8	0.1	7385	96.0
5000	11	0.1	7396	96.2
5500	42	0.5	7438	96.7
6000	219	2.8	7657	99.6
6500	34	0.4	7691	100.0

Figure 36-5

HEIGHT ERROR DISTRIBUTION Patrick, FL (PBI RADAR Data) Range=175 NM Angle=0 DEG

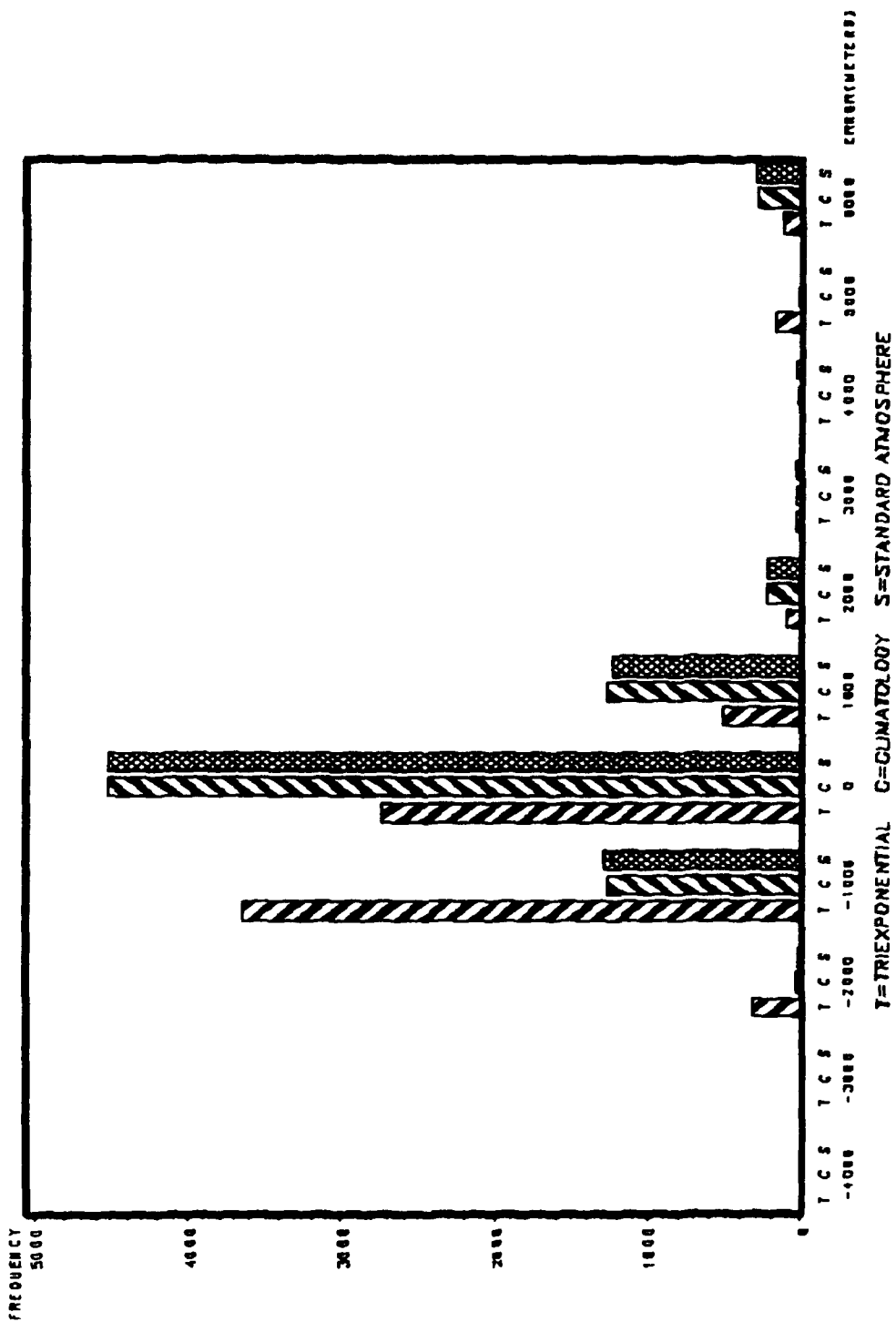


Figure 36-6

TRIEXPONENTIAL MODEL ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
-3000	0.00	0.00	0.00	0.16	0.00	0.00	0.15	0.00	0.16	0.00	0.16	0.00	
-2500	0.00	0.00	0.00	0.00	0.00	0.15	0.15	0.00	0.00	0.15	0.00	0.00	
-2000	0.16	0.18	0.46	0.16	0.45	0.77	1.38	4.37	2.80	1.38	1.27	0.15	
-1500	3.41	1.82	1.99	2.80	4.35	14.64	17.02	25.49	19.57	12.54	6.97	4.32	
-1000	15.61	16.91	17.18	17.55	23.87	32.67	29.75	31.83	36.96	33.64	27.26	21.01	
-500	32.85	34.36	34.66	33.54	30.63	24.81	22.55	20.66	23.91	27.06	32.17	37.26	
0	24.72	23.64	27.15	22.67	22.52	10.48	11.04	9.20	8.23	12.84	16.48	20.27	
500	11.71	8.91	7.52	9.16	7.66	5.70	6.75	3.02	3.42	5.50	5.86	8.94	
1000	4.39	5.09	4.14	5.12	2.10	3.24	2.61	1.36	1.71	2.29	3.17	3.73	
1500	1.46	1.09	1.69	1.71	1.05	1.23	1.38	0.45	0.16	0.61	1.90	1.34	
2000	0.98	0.36	0.46	1.09	1.05	0.62	0.46	0.30	0.62	0.15	0.32	0.15	
2500	0.16	0.55	0.15	0.31	0.75	0.31	0.46	0.15	0.16	0.31	0.48	0.00	
3000	0.00	0.18	0.15	0.47	0.60	0.62	0.92	0.15	0.00	0.46	0.00	0.00	
3500	0.00	0.91	0.00	0.16	0.15	0.15	0.31	0.00	0.00	0.15	0.00	0.15	
4000	0.33	0.18	0.00	0.00	0.00	0.31	0.77	0.15	0.16	0.00	0.16	0.00	
4500	0.00	0.00	0.00	0.16	0.15	0.31	0.15	0.30	0.16	0.00	0.00	0.00	
5000	0.00	0.55	0.46	0.78	2.70	3.08	4.14	2.41	1.55	1.22	1.11	0.00	
5500	0.81	1.82	1.84	2.17	1.50	0.92	0.00	0.15	0.47	1.53	1.11	0.75	
6000	1.79	3.27	2.15	2.02	0.45	0.00	0.00	0.00	0.00	0.15	1.11	1.79	
6500	1.63	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.15	
Total	615	550	652	644	666	649	652	663	644	654	631	671	7691

Figure 36-7

CLIMATOLOGY ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR MONTH

Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
-4000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	
-3500	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
-3000	0.00	0.00	0.31	0.00	0.00	0.00	0.00	0.00	0.16	0.15	0.00	0.00	
-2500	0.00	0.18	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.16	0.00	
-2000	0.00	0.00	0.00	0.31	0.30	0.15	0.15	0.00	0.00	0.00	0.32	0.00	
-1500	0.16	0.00	0.92	0.47	0.60	3.39	2.15	1.06	0.31	0.46	0.63	0.15	
-1000	3.90	1.64	7.36	5.59	6.61	11.56	9.20	10.86	4.35	4.74	6.18	3.87	
-500	18.37	18.36	32.82	28.11	28.23	26.50	20.71	24.28	20.81	29.36	25.20	19.82	
0	34.47	34.36	31.60	32.14	29.28	26.81	27.76	28.51	38.20	33.33	36.13	40.83	
500	23.90	24.91	12.73	16.15	18.02	14.33	16.41	18.40	20.81	17.89	17.12	22.06	
1000	10.08	8.18	4.91	5.75	6.76	7.40	8.59	8.75	7.61	6.27	4.91	7.15	
1500	2.76	3.27	3.07	3.26	1.80	2.47	5.21	2.71	3.42	3.21	3.01	2.24	
2000	1.30	1.09	1.23	1.55	1.20	1.23	2.45	1.06	1.24	0.61	1.43	0.89	
2500	0.33	0.55	0.46	0.78	0.90	0.62	0.31	0.75	0.47	0.00	0.48	0.15	
3000	0.16	0.55	0.00	0.31	0.75	0.15	0.31	0.30	0.16	0.15	0.32	0.00	
3500	0.00	0.18	0.15	0.16	0.60	0.46	1.07	0.30	0.16	0.76	0.00	0.15	
4000	0.16	0.73	0.00	0.00	0.15	0.46	0.46	0.00	0.00	0.15	0.00	0.00	
4500	0.16	0.18	0.00	0.16	0.00	0.00	0.77	0.00	0.00	0.00	0.00	0.00	
5000	0.00	0.00	0.15	0.31	0.15	0.46	0.00	0.15	0.16	0.00	0.32	0.00	
5500	0.00	0.18	0.31	0.47	0.75	2.16	2.45	0.00	0.16	0.00	0.00	0.00	
6000	1.30	2.73	3.99	4.35	3.90	1.85	1.84	2.87	2.02	2.91	3.65	2.68	
6500	2.93	2.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Total	615	550	652	644	666	649	652	663	644	654	631	671	7691

Figure 36-8

HEIGHT DISIRIBUTION Patrick, FL (PBI RAOB Data) Range=175 NM Angle=0 DEG



Figure 36-9

RMS ERRORS (meters) FOR
Odessa, TX (MAF RAOB Data)
Range=175 NM Angle=0 DEG

ENTIRE POR

TRIEXPONENTIAL	CLIMATOLOGY	STANDARD ATMOSPHERE
1796	1774	1795

RMS HEIGHT ERRORS FROM THE TRIEXPONENTIAL MODEL
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	1889	1059	2455
FEB	1605	1107	1979
MAR	1974	1301	2468
APR	1893	772	2556
MAY	1948	1264	2446
JUN	1393	1347	1438
JUL	1807	1697	1911
AUG	1545	1262	1784
SEP	1294	1070	1480
OCT	1924	1078	2493
NOV	2195	1227	2849
DEC	1864	1367	2253

RMS HEIGHT ERRORS FROM CLIMATOLOGY
BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	1763	1098	2241
FEB	1537	1171	1829
MAR	1900	1352	2320
APR	1848	874	2457
MAY	1926	1375	2350
JUN	1487	1459	1514
JUL	1953	1849	2053
AUG	1680	1394	1924
SEP	1366	1122	1567
OCT	1876	1115	2402
NOV	2065	1262	2631
DEC	1740	1389	2030

Figure 37-1

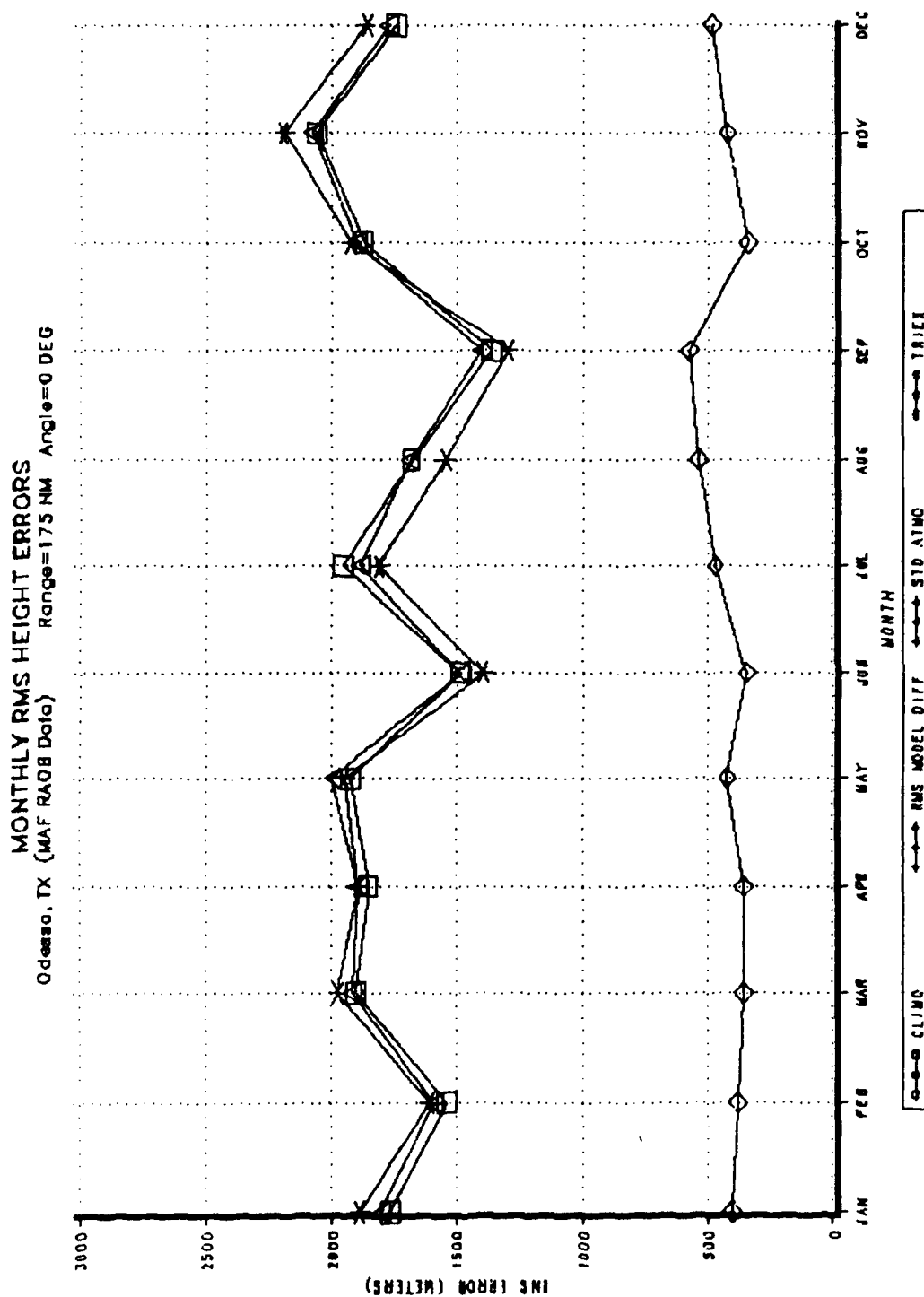


Figure 37-2

MONTHLY RMS HEIGHT ERRORS BY HOUR

Odessa, TX (MAF RA08 Data)
Range=173 NM Angle=0 DEG

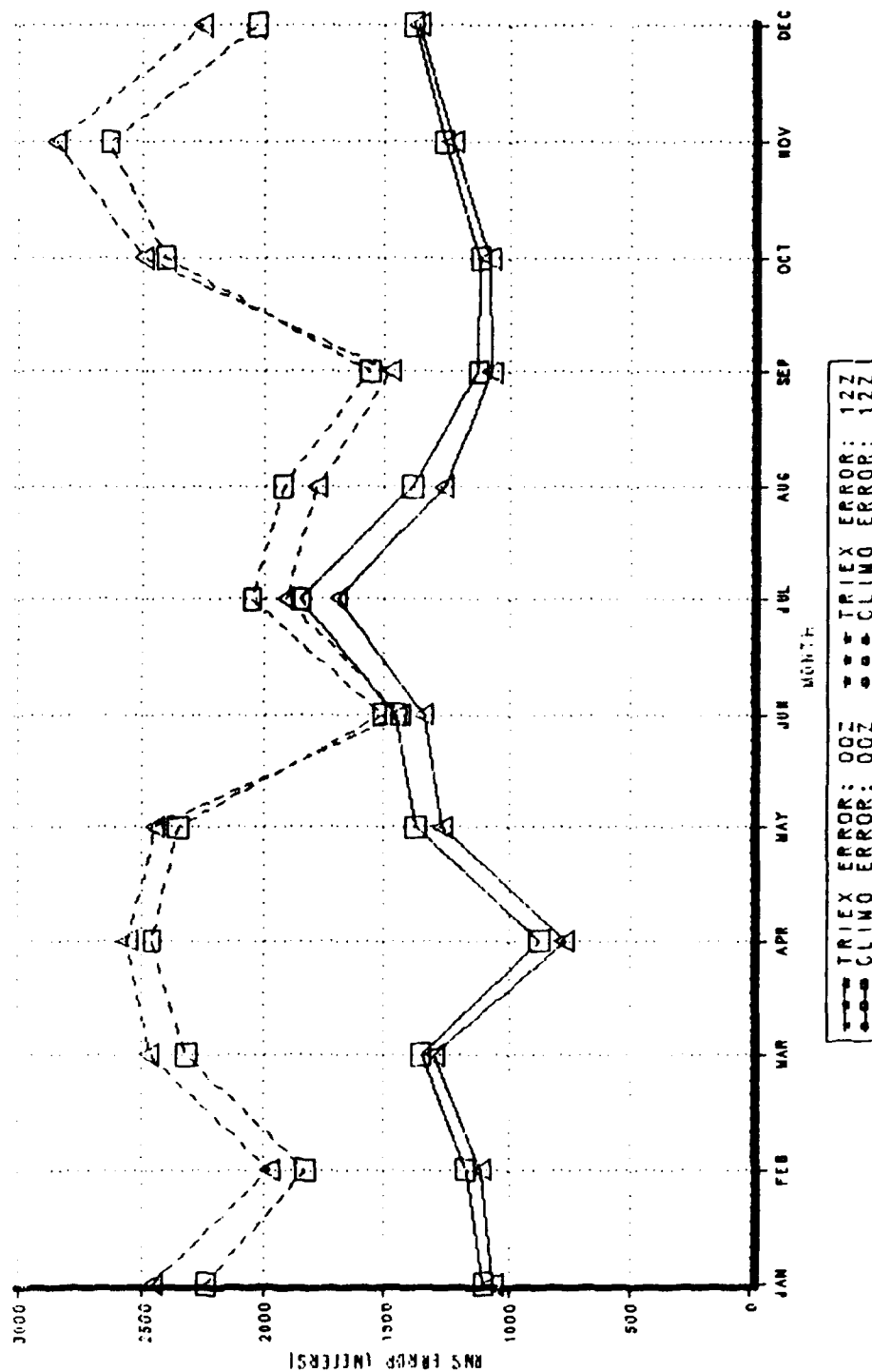


Figure 37-3

ERROR STATISTICS
Odessa, TX (MAF RAOB Data)
Range=175 NM Angle=0 DEG

MODEL	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
TRIEXPONENTIAL	427.23	1745.03	-2749.7	6890.1
CLIMATOLOGY	419.66	1724.04	-2929.5	6941.6
STANDARD ATMOSPHERE	-46.97	1794.28	-3376.8	5968.2

Figure 37-4

TRIEXPONENTIAL MODEL ERRORS
Odessa, TX (MAF RAOB Data)
Range=175 NM Angle=0 DEG

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-2500	3	0.0	3	0.0
-2000	10	0.1	13	0.2
-1500	92	1.2	105	1.3
-1000	506	6.5	611	7.8
-500	2080	26.7	2691	34.5
0	2878	36.9	5569	71.5
500	869	11.1	6438	82.6
1000	381	4.9	6819	87.5
1500	197	2.5	7016	90.0
2000	102	1.3	7118	91.3
2500	59	0.8	7177	92.1
3000	37	0.5	7214	92.6
3500	24	0.3	7238	92.9
4000	12	0.2	7250	93.0
4500	13	0.2	7263	93.2
5000	8	0.1	7271	93.3
5500	51	0.7	7322	93.9
6000	151	1.9	7473	95.9
6500	287	3.7	7760	99.6
7000	34	0.4	7794	100.0

CLIMATOLOGY ERRORS

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-3000	3	0.0	3	0.0
-2500	6	0.1	9	0.1
-2000	19	0.2	28	0.4
-1500	94	1.2	122	1.6
-1000	566	7.3	688	8.8
-500	2003	25.7	2691	34.5
0	2763	35.5	5454	70.0
500	1012	13.0	6466	83.0
1000	380	4.9	6846	87.8
1500	201	2.6	7047	90.4
2000	77	1.0	7124	91.4
2500	56	0.7	7180	92.1
3000	37	0.5	7217	92.6
3500	24	0.3	7241	92.9
4000	10	0.1	7251	93.0
4500	13	0.2	7264	93.2
5000	4	0.1	7268	93.3
5500	15	0.2	7283	93.4
6000	357	4.6	7640	98.0
6500	91	1.2	7731	99.2
7000	63	0.8	7794	100.0

Figure 37-5

HEIGHT ERROR DISTRIBUTION Odessa, TX (MAF RA08 Data) Range=175 NM Angle=0 DEG

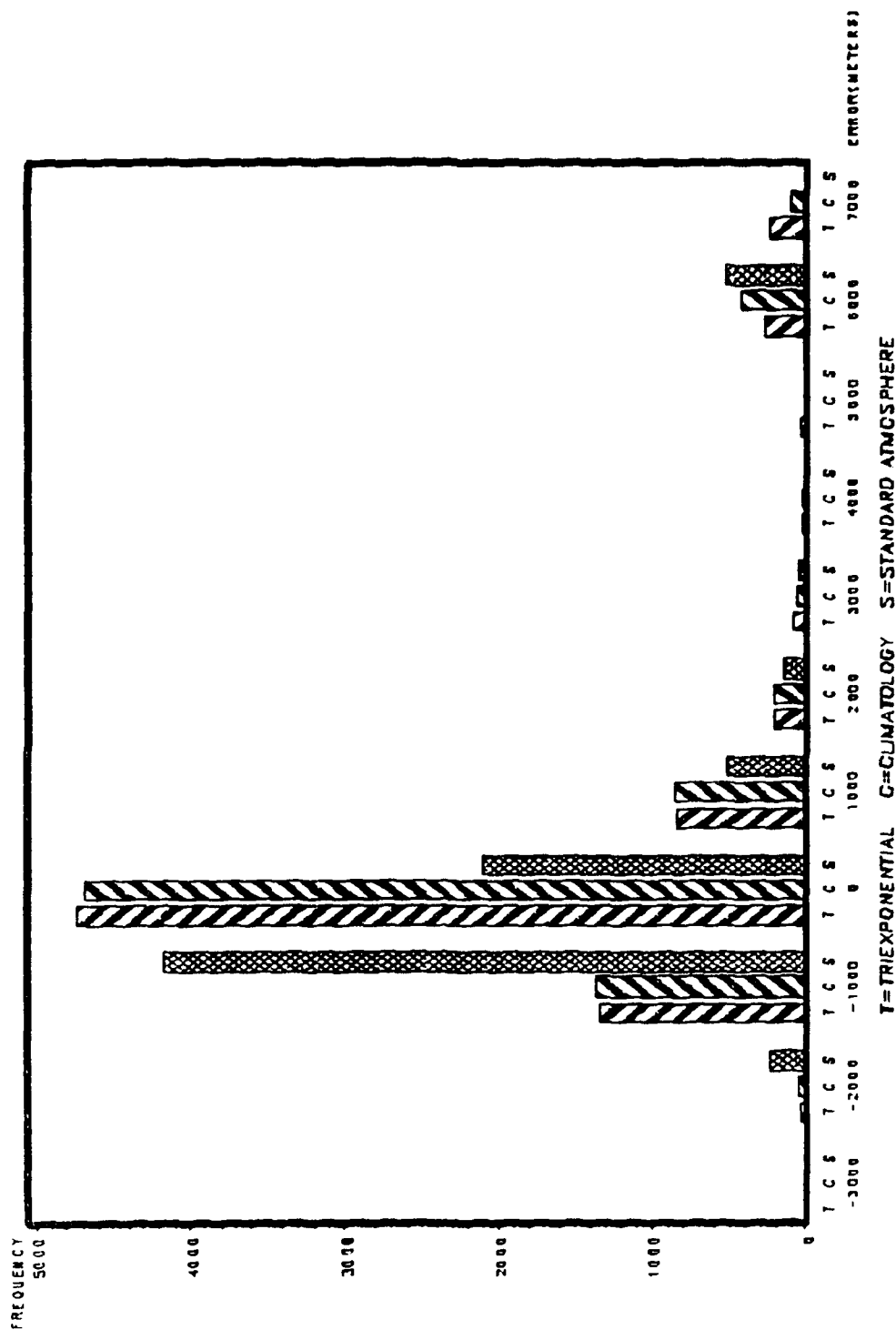


Figure 37-6

TRIEXPONENTIAL MODEL ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
-2500	0.00	0.00	0.00	0.00	0.00	0.15	0.16	0.15	0.00	0.00	0.00	0.00	
-2000	0.00	0.00	0.15	0.31	0.00	0.00	0.16	0.15	0.63	0.15	0.00	0.00	
-1500	0.15	0.17	0.15	0.63	1.35	2.01	2.02	3.59	2.98	0.76	0.32	0.00	
-1000	0.90	1.32	1.79	2.82	6.47	8.36	16.90	17.81	13.66	5.29	1.61	0.75	
-500	10.01	13.70	20.30	22.88	30.53	36.22	39.84	43.26	43.49	33.38	16.53	9.62	
0	55.75	52.15	44.33	42.01	31.43	27.55	20.00	16.47	24.80	32.02	44.30	52.93	
500	13.75	14.36	13.73	11.60	12.33	10.22	5.58	7.04	6.28	9.97	13.80	15.19	
1000	6.13	5.94	5.22	7.21	4.81	5.88	2.79	2.25	2.51	4.53	5.30	6.17	
1500	2.39	3.96	3.28	1.88	2.11	2.17	1.09	1.65	1.10	2.87	4.17	3.76	
2000	2.24	1.49	1.64	1.10	1.20	1.39	1.09	0.60	0.78	1.21	1.61	1.35	
2500	0.30	0.66	0.45	1.25	0.30	1.24	1.09	0.75	0.31	0.60	0.64	1.50	
3000	0.60	0.33	0.45	0.47	0.15	0.62	0.93	0.15	0.16	0.15	1.12	0.60	
3500	0.30	0.50	0.15	0.31	0.15	0.00	0.93	0.60	0.00	0.15	0.00	0.60	
4000	0.00	0.33	0.15	0.00	0.00	0.31	0.16	0.00	0.00	0.45	0.16	0.30	
4500	0.30	0.00	0.15	0.00	0.30	0.15	0.16	0.30	0.00	0.45	0.16	0.00	
5000	0.00	0.17	0.00	0.00	0.15	0.00	0.31	0.00	0.00	0.15	0.00	0.45	
5500	0.15	0.00	0.00	0.00	0.90	1.08	1.71	2.54	0.47	0.15	0.16	0.60	
6000	0.15	0.50	0.75	1.88	4.51	2.17	3.72	2.69	1.41	3.32	1.61	0.45	
6500	6.28	4.29	5.82	4.86	3.16	0.46	1.40	0.00	1.26	4.23	7.38	5.11	
7000	0.60	0.17	1.49	0.78	0.15	0.00	0.00	0.00	0.16	0.15	1.12	0.60	
Total	669	606	670	638	665	646	645	668	637	662	623	665	7794

Figure 37-7

CLIMATOLOGY ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												Total
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
-3000	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.16	0.15	0.00	0.00	
-2500	0.00	0.00	0.00	0.31	0.15	0.31	0.16	0.00	0.00	0.00	0.00	0.00	
-2000	0.00	0.00	0.15	0.16	2.11	0.31	0.16	0.00	0.00	0.00	0.00	0.00	
-1500	0.75	0.66	0.60	0.78	3.76	1.08	0.93	1.50	1.26	1.21	1.28	0.60	
-1000	5.53	5.78	4.78	6.27	12.48	8.20	7.29	8.08	4.87	6.80	7.06	9.77	
-500	25.11	22.44	22.99	21.00	34.14	22.45	22.17	20.36	15.07	32.63	36.12	33.53	
0	45.59	45.38	42.84	39.97	22.56	30.19	35.04	34.73	37.99	31.57	26.48	33.38	
500	9.57	11.72	12.84	14.26	8.42	16.87	13.49	17.37	24.33	10.42	9.63	7.22	
1000	2.39	5.61	3.88	3.76	3.01	8.82	5.58	5.69	7.54	4.08	4.01	4.36	
1500	2.09	1.32	2.24	2.51	2.56	3.56	2.79	3.29	3.77	2.42	2.73	1.65	
2000	0.75	0.66	0.75	2.04	1.20	1.39	0.62	1.35	0.63	0.91	0.96	0.60	
2500	0.45	0.50	0.30	0.78	0.30	1.24	1.55	0.45	0.47	0.60	0.80	1.20	
3000	0.30	0.50	0.30	0.31	0.00	0.93	1.24	0.45	0.47	0.45	0.32	0.45	
3500	0.15	0.33	0.15	0.31	0.15	0.46	1.24	0.60	0.16	0.00	0.16	0.00	
4000	0.15	0.00	0.00	0.00	0.30	0.15	0.16	0.30	0.00	0.45	0.00	0.00	
4500	0.00	0.17	0.00	0.00	0.30	0.00	0.31	0.30	0.00	0.30	0.16	0.45	
5000	0.15	0.00	0.15	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.15	
5500	0.00	0.17	0.00	0.00	0.75	0.00	0.31	0.30	0.00	0.00	0.32	0.45	
6000	5.83	3.47	6.27	7.05	6.17	1.86	0.31	4.04	0.00	6.95	8.51	4.36	
6500	0.15	0.00	0.00	0.00	1.65	1.86	3.72	0.00	2.35	1.06	1.44	1.80	
7000	1.05	1.32	1.79	0.47	0.00	0.00	2.95	1.20	0.94	0.00	0.00	0.00	
Total	669	606	670	638	665	646	645	668	637	662	623	665	7794

Figure 37-8

HEIGHT DISTRIBUTION

Odessa, TX (MAF RAOB Data) Range = 175 NM Angle = 0 DEG

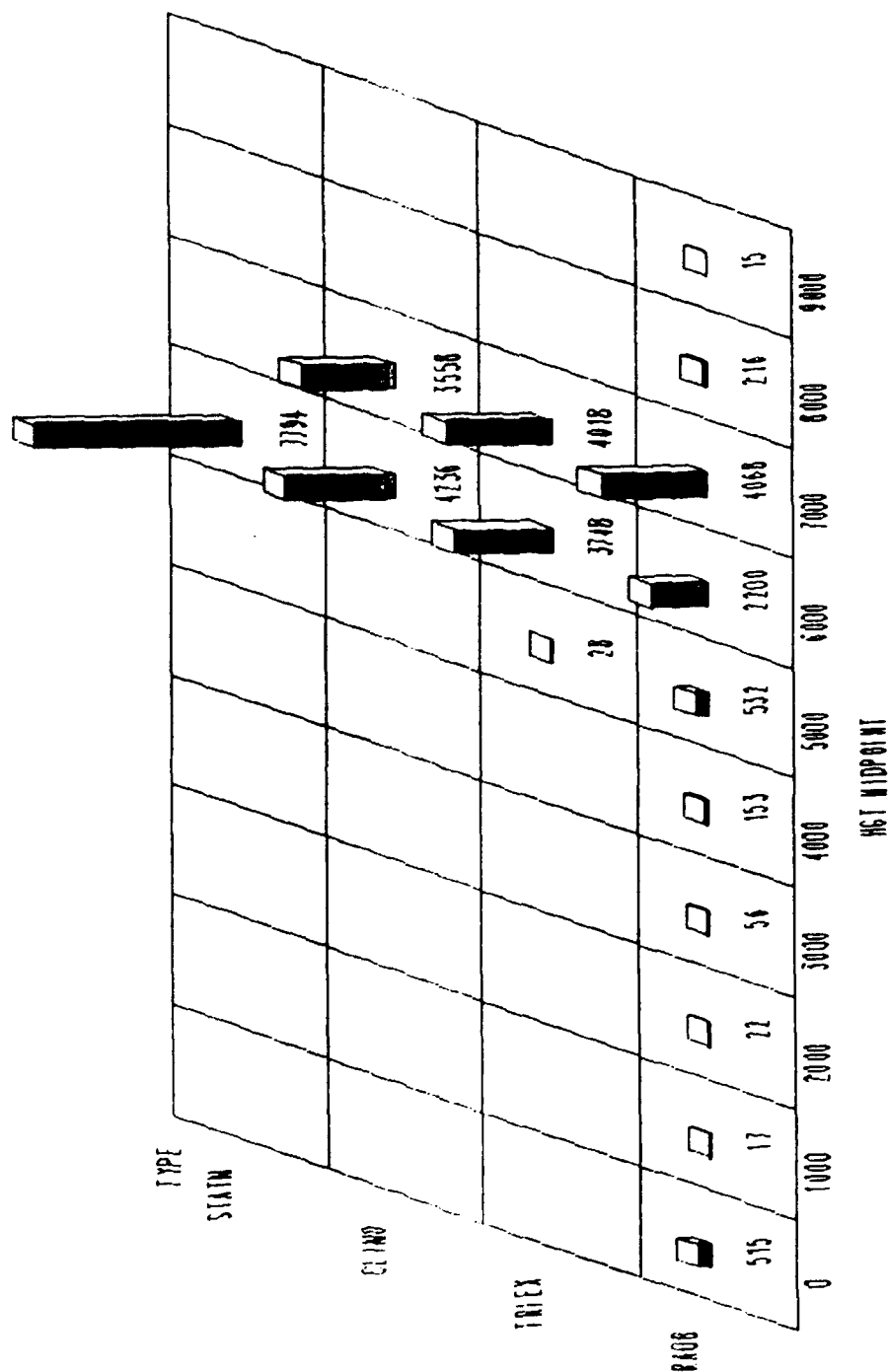


Figure 37-9

RMS ERRORS (meters) FOR
 Ft Lonesome, FL (TPA RAOB Data)
 Range=175 NM Angle=0 DEG

ENTIRE POR

TRIEXPONENTIAL	CLIMATOLOGY	STANDARD ATMOSPHERE
1804	1784	1872

RMS HEIGHT ERRORS FROM THE TRIEXPONENTIAL MODEL
 BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	2093	2185	1998
FEB	1830	1659	1986
MAR	1821	1570	2042
APR	1992	1663	2273
MAY	1572	1526	1618
JUN	1442	1417	1467
JUL	1494	1545	1442
AUG	1622	1537	1701
SEP	1398	1507	1283
OCT	1948	1997	1896
NOV	2067	2315	1785
DEC	2147	2479	1753

RMS HEIGHT ERRORS FROM CLIMATOLOGY
 BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	2023	2041	2006
FEB	1794	1613	1959
MAR	1762	1499	1992
APR	1944	1655	2195
MAY	1606	1576	1635
JUN	1465	1428	1500
JUL	1547	1591	1501
AUG	1696	1600	1785
SEP	1435	1582	1277
OCT	1917	1899	1934
NOV	2036	2244	1805
DEC	2029	2241	1792

Figure 38-1

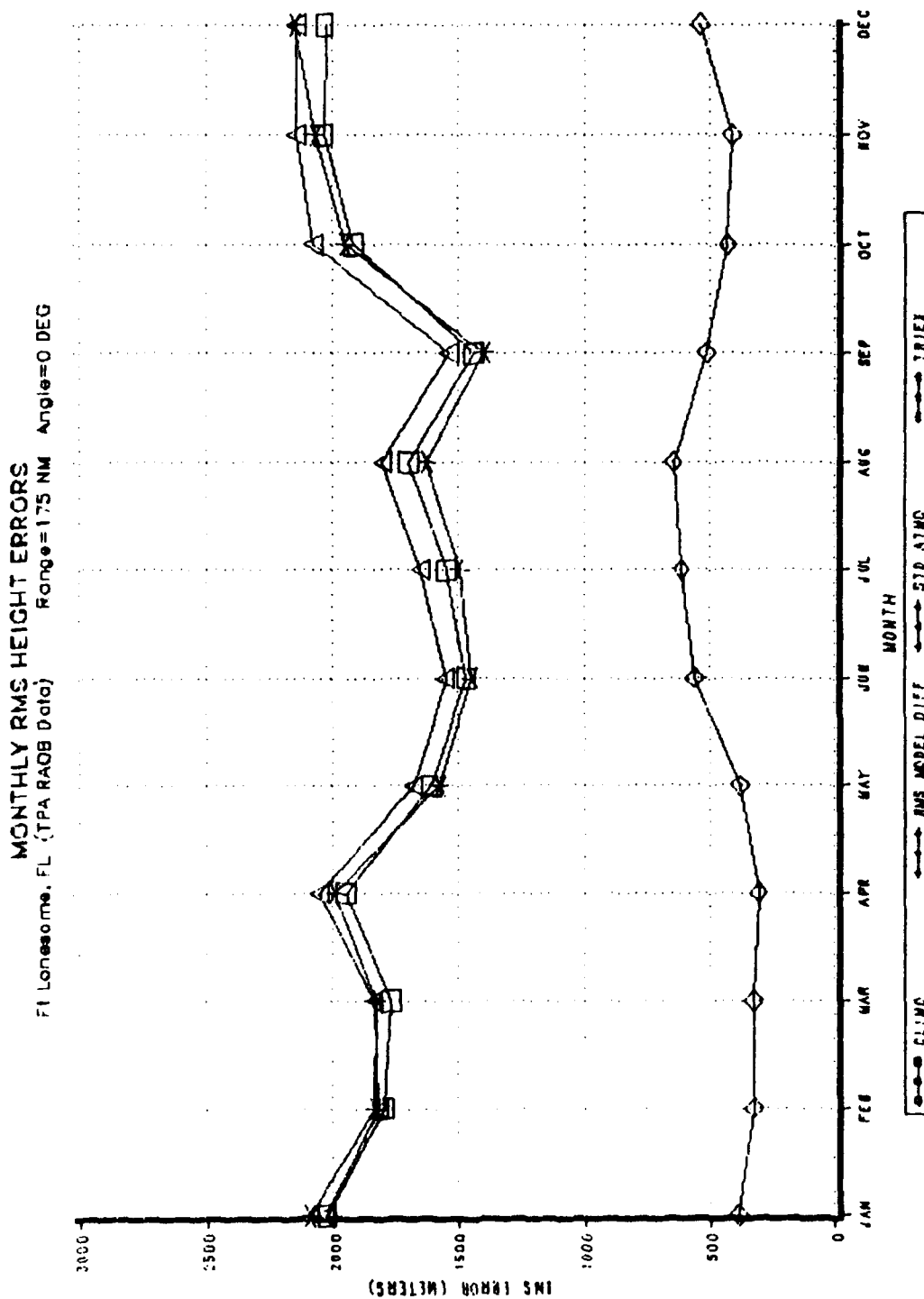


Figure 38-2

MONTHLY RMS HEIGHT ERRORS BY HOUR

Ft Lonesome, FL (TPA RAOB Data)
Range=173 NM Angle=0 DEG

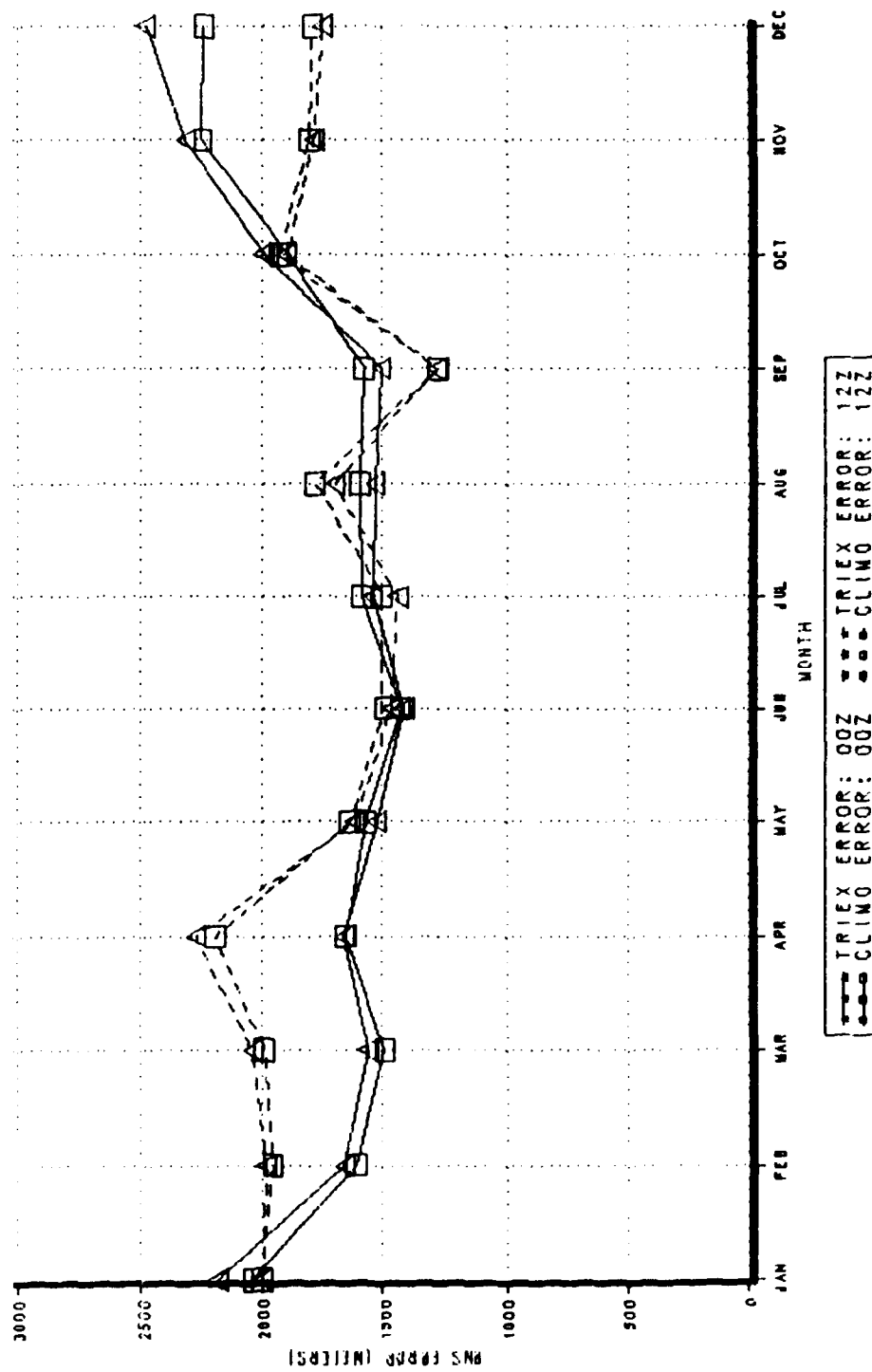


Figure 38-3

ERROR STATISTICS
Ft Lonesome, FL (TPA RAOB Data)
Range=175 NM Angle=0 DEG

MODEL	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
TRIEXPONENTIAL	307.19	1778.04	-2959.7	6535.3
CLIMATOLOGY	525.51	1704.94	-4203.8	6227.9
STANDARD ATMOSPHERE	764.14	1708.62	-3879.4	5997.4

Figure 38-4

TRIEXPONENTIAL MODEL ERRORS
Ft Lonesome, FL (TPA RAOB Data)
Range=175 NM Angle=0 DEG

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-3000	1	0.0	1	0.0
-2500	4	0.1	5	0.1
-2000	12	0.2	17	0.2
-1500	290	3.7	307	3.9
-1000	1447	18.3	1754	22.2
-500	2110	26.7	3864	48.9
0	1643	20.8	5507	69.6
500	902	11.4	6409	81.0
1000	408	5.2	6817	86.2
1500	212	2.7	7029	88.9
2000	90	1.1	7119	90.0
2500	61	0.8	7180	90.8
3000	41	0.5	7221	91.3
3500	23	0.3	7244	91.6
4000	21	0.3	7265	91.9
4500	22	0.3	7287	92.1
5000	164	2.1	7451	94.2
5500	168	2.1	7619	96.3
6000	246	3.1	7865	99.5
6500	43	0.5	7908	100.0

CLIMATOLOGY ERRORS

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-4000	3	0.0	3	0.0
-3500	2	0.0	5	0.1
-2500	3	0.0	8	0.1
-2000	2	0.0	10	0.1
-1500	61	0.8	71	0.9
-1000	597	7.5	668	8.4
-500	2088	26.4	2756	34.9
0	2202	27.8	4958	62.7
500	1218	15.4	6176	78.1
1000	549	6.9	6725	85.0
1500	265	3.4	6990	88.4
2000	127	1.6	7117	90.0
2500	59	0.7	7176	90.7
3000	36	0.5	7212	91.2
3500	35	0.4	7247	91.6
4000	17	0.2	7264	91.9
4500	15	0.2	7279	92.0
5000	33	0.4	7312	92.5
5500	401	5.1	7713	97.5
6000	195	2.5	7908	100.0

Figure 38-5

Angle=0 DEG

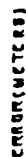


Figure 38-6

TRIEXPONENTIAL MODEL ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												Total
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
-3000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	
-2500	0.00	0.00	0.00	0.15	0.15	0.15	0.00	0.00	0.15	0.00	0.00	0.00	
-2000	0.00	0.00	0.00	0.00	0.15	0.46	0.30	0.75	0.00	0.00	0.00	0.15	
-1500	0.29	.66	0.15	0.00	2.23	7.26	9.60	11.18	6.63	3.13	1.26	1.34	
-1000	6.47	6.73	7.93	10.79	20.21	30.29	32.05	30.70	32.67	16.57	14.65	9.99	
-500	21.03	25.67	25.15	25.23	29.57	29.21	27.18	26.38	30.35	30.00	28.19	22.50	
0	28.24	27.26	27.99	25.08	18.28	14.53	13.29	14.90	13.10	17.91	21.73	27.27	
500	17.79	14.94	16.92	15.35	13.52	7.26	6.20	4.17	5.08	10.15	11.02	14.46	
1000	8.38	8.21	7.93	6.53	4.16	2.32	2.66	1.94	3.08	5.52	5.20	6.11	
1500	3.68	4.76	3.29	3.19	2.97	1.70	1.33	0.89	2.62	2.24	3.31	2.38	
2000	2.06	1.81	0.90	1.37	0.74	0.62	0.59	0.45	0.92	1.94	0.94	1.34	
2500	0.88	0.99	0.60	1.22	0.89	0.31	0.30	0.45	0.46	0.75	0.94	1.49	
3000	0.59	0.49	0.30	0.15	0.15	0.77	0.30	0.60	0.15	0.90	0.79	1.04	
3500	0.29	0.33	0.60	0.30	0.59	0.00	0.44	0.00	0.00	0.45	0.31	0.15	
4000	0.00	0.16	0.30	0.30	0.45	0.15	0.15	0.45	0.00	0.45	0.47	0.30	
4500	0.15	0.33	0.00	0.00	0.15	0.46	0.44	0.45	0.00	0.60	0.31	0.45	
5000	0.15	0.66	0.15	0.30	1.19	2.78	5.02	6.11	4.16	2.24	1.42	0.60	
5500	0.44	1.81	2.54	4.71	3.57	1.24	0.15	0.45	0.46	4.03	4.41	1.79	
6000	6.62	3.94	4.34	5.32	1.04	0.46	0.00	0.00	0.15	3.13	4.88	7.45	
6500	2.94	1.31	0.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	1.19	
Total	680	609	668	658	673	647	677	671	649	670	635	671	7908

Figure 38-7

CLIMATOLOGY ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
-4000	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.15	0.15	0.00	0.00	0.00	
-3500	0.00	0.00	0.00	0.00	0.15	0.15	0.00	0.00	0.00	0.00	0.00	0.00	
-2500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.16	0.15	
-2000	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.15	
-1500	0.00	0.33	0.15	0.61	0.59	0.93	0.59	0.75	0.31	3.13	0.47	1.34	
-1000	3.38	3.61	5.54	9.73	7.28	7.57	8.27	7.30	10.32	13.13	4.41	9.69	
-500	22.50	24.79	31.59	27.51	26.60	27.36	27.62	26.68	30.51	22.69	26.30	22.80	
0	30.44	30.54	29.04	26.29	28.23	29.21	27.18	29.36	27.58	25.37	28.82	22.35	
500	17.79	16.58	11.53	14.29	15.75	16.23	16.25	16.39	14.33	12.54	14.80	18.33	
1000	8.24	8.05	8.38	5.32	8.62	7.73	6.94	6.11	4.62	5.97	7.09	6.26	
1500	3.97	4.76	3.59	3.04	3.12	2.32	3.84	2.83	3.24	3.13	2.20	4.17	
2000	1.62	1.64	0.75	1.67	1.63	1.70	1.62	1.34	2.62	1.49	1.89	1.34	
2500	0.74	0.99	0.45	0.30	0.45	0.62	0.89	0.30	1.23	1.34	1.26	0.45	
3000	0.74	0.16	0.45	0.46	0.30	0.46	0.15	0.45	0.00	0.45	0.47	1.34	
3500	0.15	0.33	0.45	0.15	0.59	0.62	0.44	0.75	0.31	0.60	0.79	0.15	
4000	0.15	0.33	0.15	0.15	0.45	0.15	0.44	0.15	0.00	0.30	0.16	0.15	
4500	0.29	0.33	0.00	0.00	0.30	0.15	0.15	0.15	0.00	0.15	0.31	0.45	
5000	0.00	0.16	0.00	0.30	0.00	0.31	0.00	0.15	0.00	3.28	0.31	0.45	
5500	4.85	0.66	4.19	10.03	3.12	4.33	4.73	7.00	4.78	2.54	7.09	7.30	
6000	5.15	6.73	3.74	0.00	2.67	0.15	0.89	0.00	0.00	3.88	3.46	3.13	
Total	680	609	668	658	673	647	677	671	649	670	635	671	7908

Figure 38-8

HEIGHT DISTRIBUTION

FL Lonesome, FL (TPA RAOB Data) Range=175 NM Angle=0 DEG

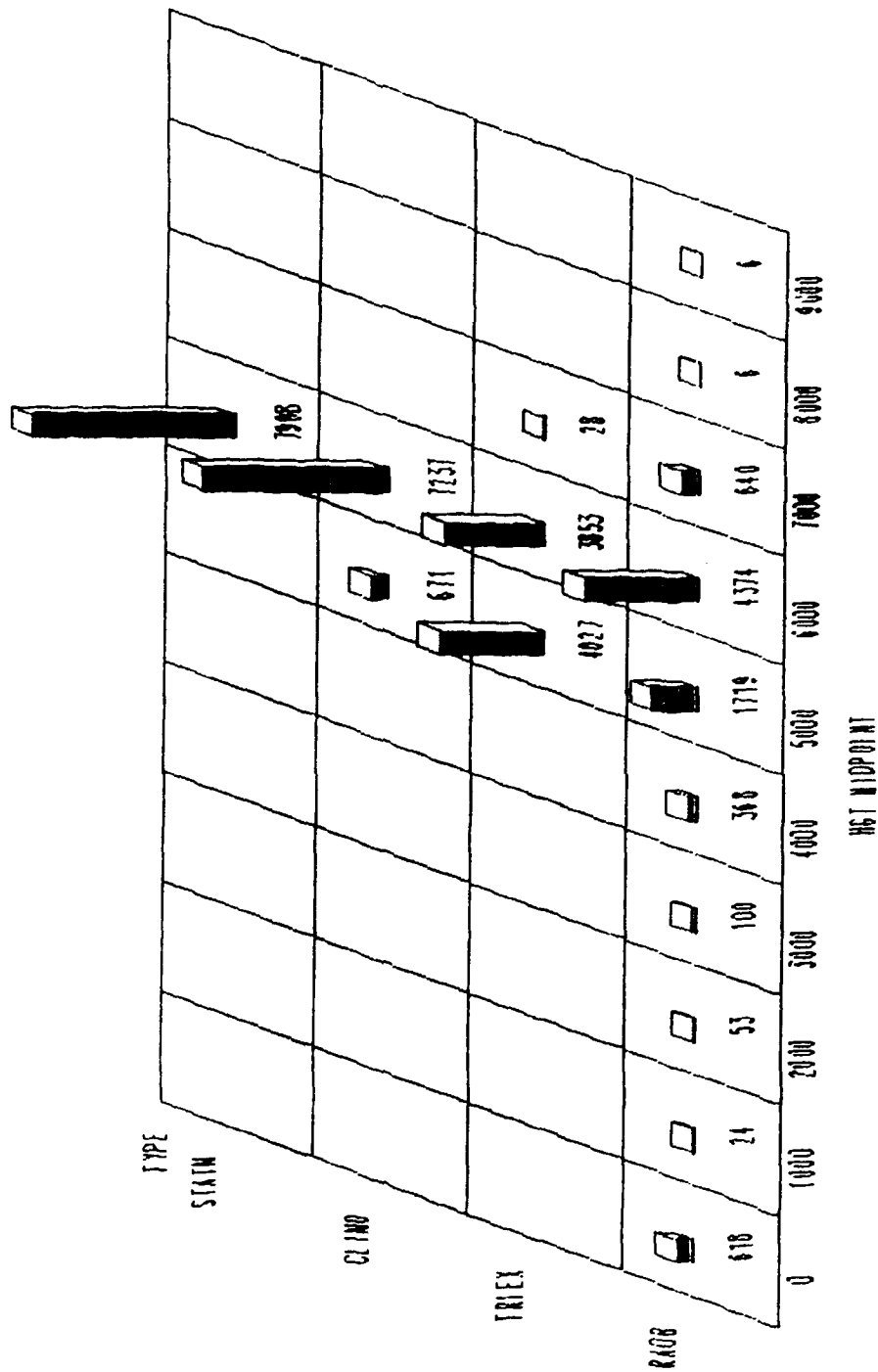


Figure 38-9

RMS ERRORS (meters) FOR
 North Truro, MA (CHH RAOB Data)
 Range=175 NM Angle=0 DE

ENTIRE POR

TRIEXPONENTIAL	CLIMATOLOGY	STANDARD ATMOSPHERE
1932	1894	1980

RMS HEIGHT ERRORS FROM THE TRIEXPONENTIAL MODEL
 BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	1067	996	1135
FEB	988	858	1101
MAR	1394	1445	1342
APR	1951	1942	1959
MAY	2362	2575	2131
JUN	2566	2618	2515
JUL	2739	2786	2691
AUG	2472	2481	2463
SEP	2114	2219	2006
OCT	1878	1832	1923
NOV	1226	1354	1082
DEC	1103	1061	1144

RMS HEIGHT ERRORS FROM CLIMATOLOGY
 BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	1083	1004	1158
FEB	988	854	1104
MAR	1390	1440	1340
APR	1896	1888	1904
MAY	2295	2487	2089
JUN	2490	2565	2415
JUL	2700	2766	2632
AUG	2453	2458	2448
SEP	2056	2143	1966
OCT	1799	1751	1847
NOV	1224	1362	1068
DEC	1110	1059	1159

Figure 39-1

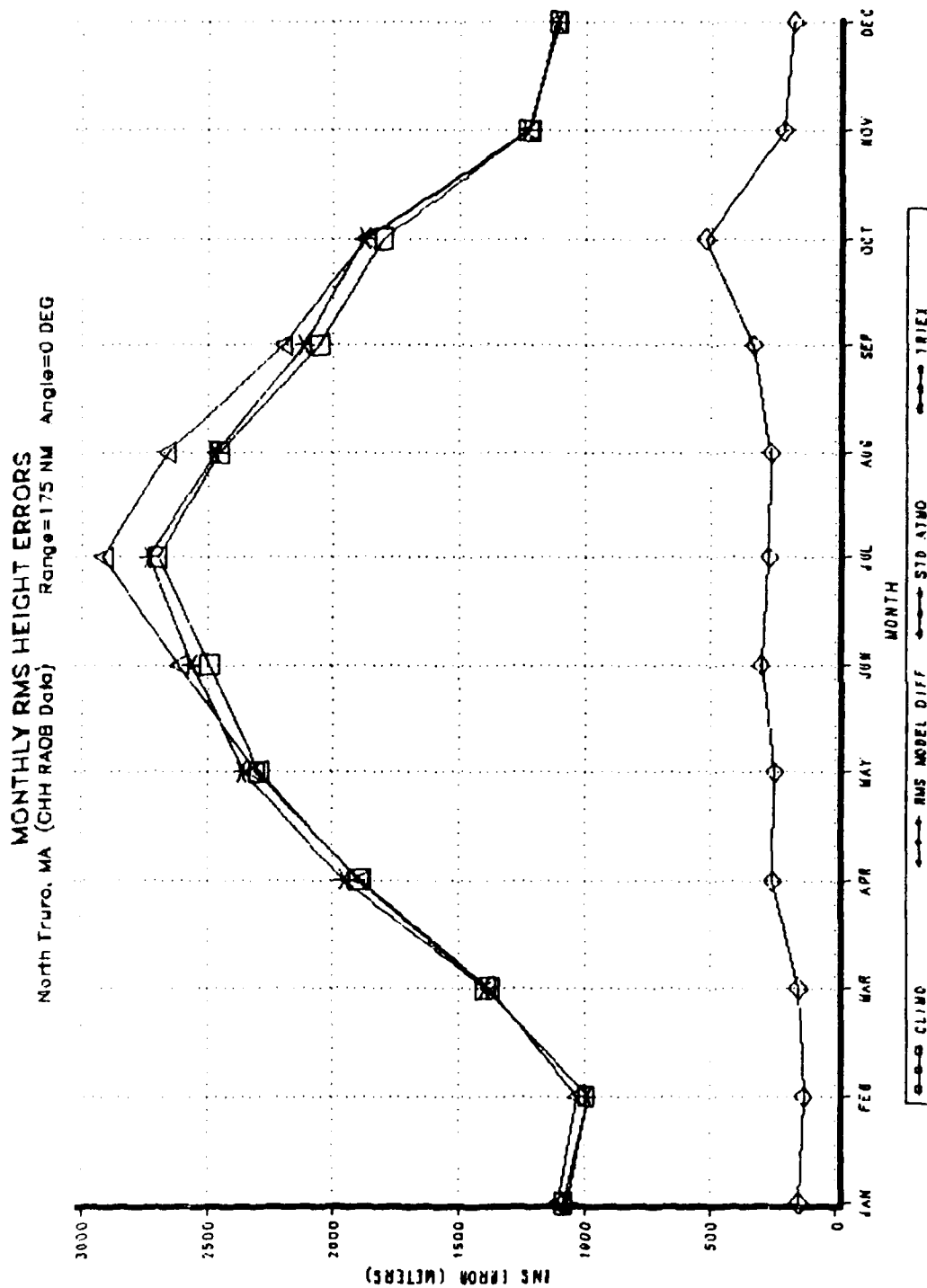


Figure 39-2

MONTHLY RMS HEIGHT ERRORS BY HOUR

North Truro, MA (CHH RAOB Data)
Range=175 NM Angle=0 DEG

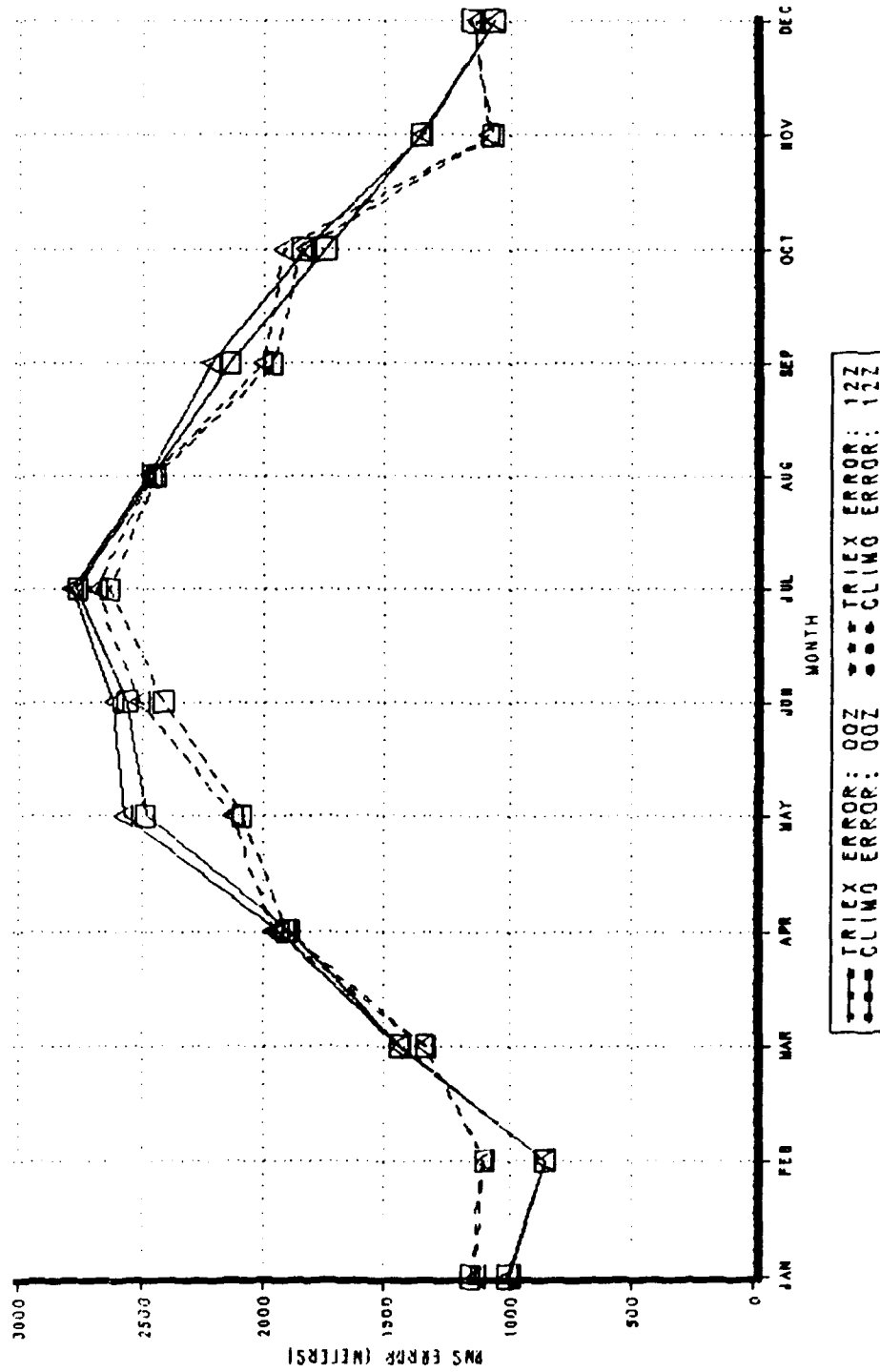


Figure 39-3

ERROR STATISTICS
 North Truro, MA (CHH RAOB Data)
 Range=175 NM Angle=0 DEG

MODEL	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
TRIEXPONENTIAL	570.31	1846.09	-2353.1	6501.6
CLIMATOLOGY	466.96	1836.15	-2381.2	6516.6
STANDARD ATMOSPHERE	489.37	1918.98	-2471.9	6001.2

Figure 39-4

TRIEXPONENTIAL MODEL ERRORS
North Truro, MA (CHH RAOB Data)
Range=175 NM Angle=0 DEG

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-2500	2	0.0	2	0.0
-2000	15	0.2	17	0.2
-1500	165	2.1	182	2.3
-1000	607	7.7	789	10.1
-500	1530	19.5	2319	29.6
0	2879	36.7	5198	66.3
500	1020	13.0	6218	79.3
1000	419	5.3	6637	84.7
1500	226	2.9	6863	87.5
2000	103	1.3	6966	88.9
2500	52	0.7	7018	89.5
3000	40	0.5	7058	90.0
3500	23	0.3	7081	90.3
4000	11	0.1	7092	90.5
4500	14	0.2	7106	90.6
5000	46	0.6	7152	91.2
5500	263	3.4	7415	94.6
6000	331	4.2	7746	98.8
6500	94	1.2	7840	100.0

CLIMATOLOGY ERRORS

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-2500	1	0.0	1	0.0
-2000	24	0.3	25	0.3
-1500	185	2.4	210	2.7
-1000	768	9.8	978	12.5
-500	2096	26.7	3074	39.2
0	2406	30.7	5480	69.9
500	866	11.0	6346	80.9
1000	348	4.4	6694	85.4
1500	205	2.6	6899	88.0
2000	87	1.1	6986	89.1
2500	49	0.6	7035	89.7
3000	25	0.3	7060	90.1
3500	26	0.3	7086	90.4
4000	9	0.1	7095	90.5
4500	13	0.2	7108	90.7
5000	19	0.2	7127	90.9
5500	476	6.1	7603	97.0
6000	174	2.2	7777	99.2
6500	63	0.8	7840	100.0

Figure 39-5

HEIGHT ERROR DISTRIBUTION North Truro, MA (CHH RAOB Data) Range=175 NM Angle=0 DEG

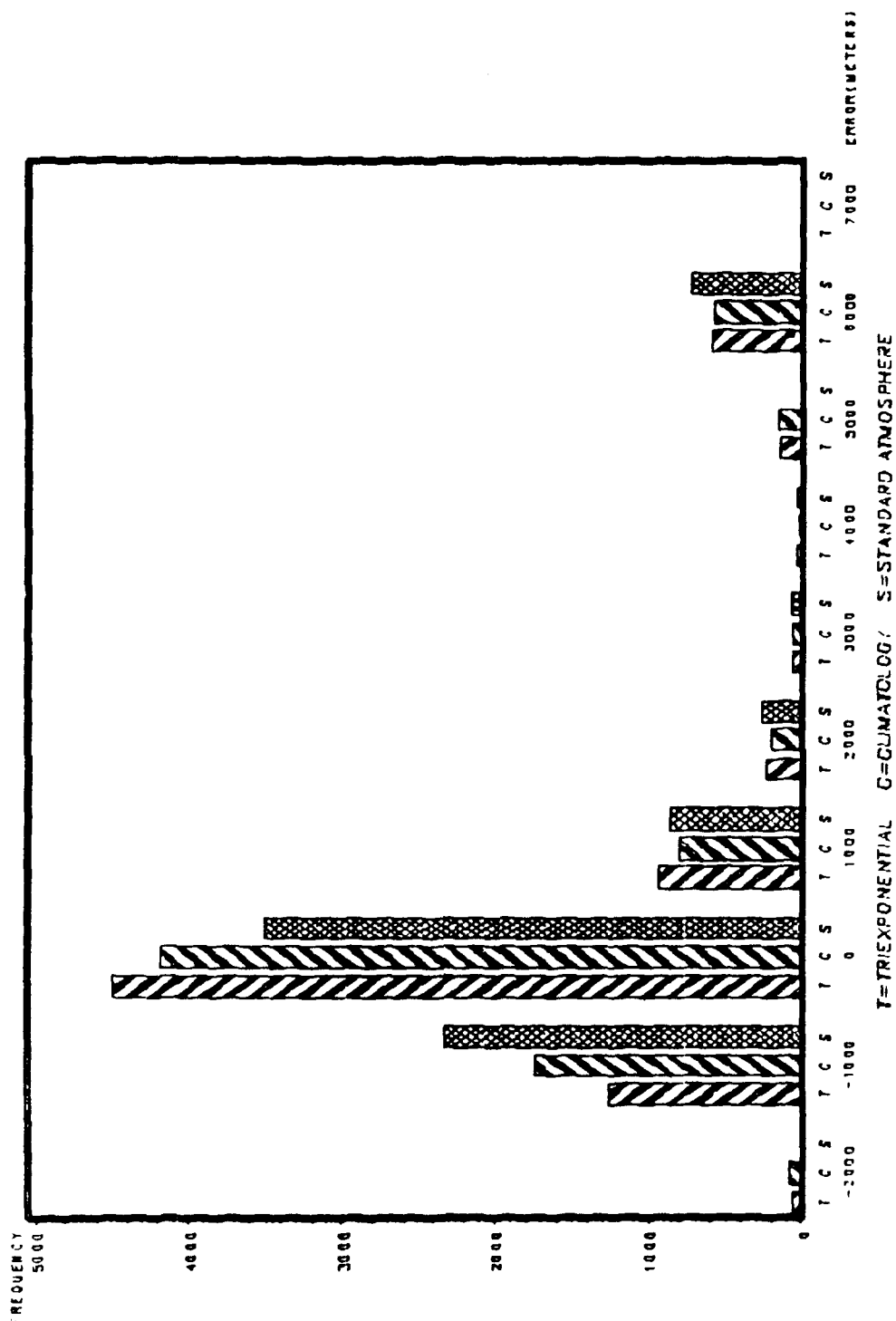


Figure 39-6

TRIEXPONENTIAL MODEL ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
-2500	0.00	0.00	0.15	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	
-2000	0.00	0.00	0.00	0.00	0.00	0.62	0.74	0.59	0.15	0.15	0.00	0.00	
-1500	0.15	0.00	0.75	1.70	3.74	3.40	6.36	3.56	1.84	1.38	1.42	0.60	
-1000	3.03	5.21	5.28	7.25	13.02	13.89	12.28	10.22	6.89	5.67	5.04	4.65	
-500	16.06	15.63	20.06	20.83	21.86	20.52	15.53	20.00	22.66	17.92	23.15	19.82	
0	64.85	59.33	48.11	32.41	23.35	16.51	17.16	20.30	24.96	34.92	47.72	53.90	
500	8.94	12.94	13.73	14.81	10.33	11.42	10.80	11.56	15.62	19.30	13.54	13.36	
1000	2.88	2.69	4.68	7.25	7.63	6.48	6.07	6.22	7.81	6.43	2.99	2.70	
1500	1.21	1.68	2.41	2.47	2.69	4.32	5.92	4.44	3.83	2.30	1.89	1.20	
2000	0.30	0.50	0.15	1.85	1.20	2.47	1.78	3.26	1.68	1.53	0.31	0.60	
2500	0.15	0.00	0.30	0.93	1.20	1.08	0.44	1.19	1.38	0.92	0.16	0.15	
3000	0.00	0.00	0.00	0.62	0.60	1.70	0.44	0.59	0.92	0.46	0.47	0.30	
3500	0.00	0.00	0.15	1.08	0.30	0.46	0.30	0.30	0.31	0.46	0.16	0.00	
4000	0.00	0.00	0.00	0.46	0.90	0.00	0.15	0.00	0.00	0.15	0.00	0.00	
4500	0.00	0.17	0.15	0.46	0.15	0.15	0.15	0.44	0.15	0.00	0.00	0.30	
5000	0.00	0.00	0.00	0.15	0.15	0.31	2.07	3.41	0.61	0.00	0.00	0.15	
5500	0.00	0.00	0.00	0.00	0.45	6.17	14.50	10.67	6.13	1.38	0.16	0.00	
6000	0.15	0.34	1.36	5.25	11.08	10.34	5.18	3.26	4.90	6.28	1.42	0.75	
6500	2.27	1.51	2.71	2.47	1.35	0.15	0.00	0.00	0.15	0.77	1.57	1.50	
Total	660	595	663	648	668	648	676	675	653	653	635	666	7840

Figure 39-7

CLIMATOLOGY ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												Total
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
-2500	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
-2000	0.00	0.00	0.30	0.00	0.00	1.08	1.18	0.30	0.31	0.46	0.00	0.00	
-1500	0.15	0.00	0.30	1.70	3.74	5.25	7.25	4.15	1.99	3.37	0.00	0.00	
-1000	0.61	2.02	3.62	11.27	15.42	18.36	11.54	10.67	13.02	24.50	4.09	1.80	
-500	14.70	23.70	34.84	36.27	27.25	22.07	18.79	21.33	29.86	31.85	33.70	26.88	
0	65.45	54.79	36.80	20.68	18.86	14.97	15.53	17.48	19.75	18.22	39.84	48.50	
500	11.36	11.93	12.67	9.88	9.88	7.72	11.09	12.74	12.71	6.58	12.44	13.51	
1000	3.33	3.03	3.77	5.25	5.69	5.25	5.62	6.67	3.83	2.60	3.46	4.50	
1500	1.21	1.68	2.71	1.85	2.54	3.86	4.44	4.89	3.22	1.99	2.20	0.60	
2000	0.61	0.84	0.30	1.85	0.90	1.39	1.18	2.37	1.53	0.77	0.47	1.05	
2500	0.15	0.00	0.30	0.93	1.35	1.54	0.59	0.89	0.92	0.46	0.16	0.15	
3000	0.00	0.00	0.00	0.46	0.15	1.08	0.59	0.30	0.61	0.15	0.16	0.30	
3500	0.00	0.00	0.15	1.08	0.60	0.31	0.30	0.30	0.31	0.61	0.31	0.00	
4000	0.00	0.00	0.00	0.46	0.30	0.15	0.15	0.30	0.00	0.00	0.00	0.00	
4500	0.00	0.17	0.15	0.46	0.30	0.15	0.00	0.15	0.31	0.00	0.00	0.30	
5000	0.00	0.00	0.00	0.00	0.30	0.46	0.74	0.59	0.31	0.31	0.00	0.15	
5500	0.00	0.00	0.00	0.00	0.15	14.04	21.01	16.89	11.33	8.12	0.16	0.00	
6000	0.00	0.17	0.60	7.72	12.57	2.31	0.00	0.00	0.00	0.00	2.99	0.15	
6500	2.42	1.68	3.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.10	
Total	660	595	663	648	668	648	676	675	653	653	635	666	7840

Figure 39-8

HEIGHT DISTRIBUTION

North Truro, MA (CHH RAOB Data) Range = 175 NM Angle = 0 DEG

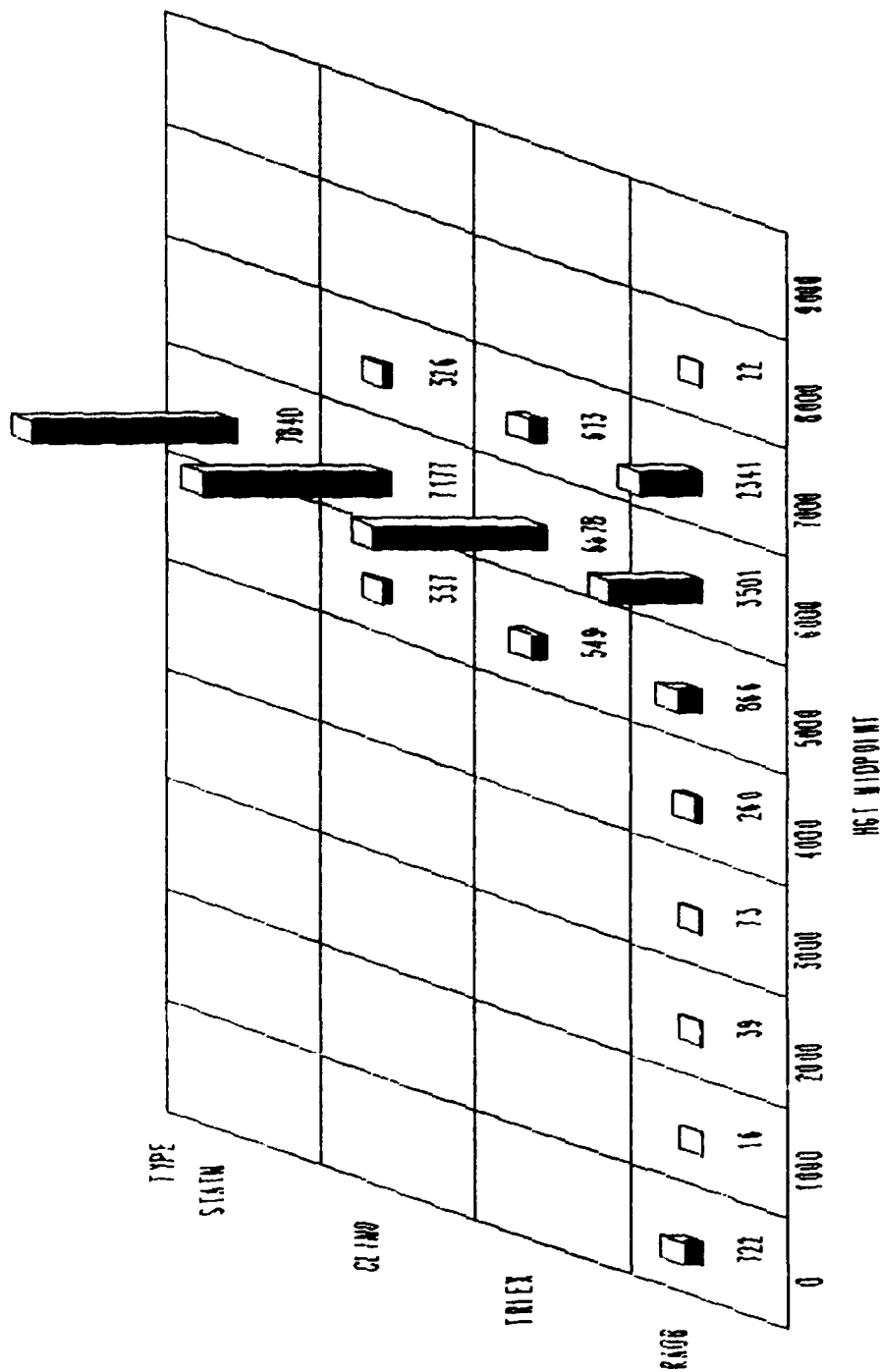


Figure 39-9

RMS ERRORS (meters) FOR
 oilton, TX (VCT RAOB Data)
 Range=175 NM Angle=0 DEG

ENTIRE POR

TRIEXPONENTIAL	CLIMATOLOGY	STANDARD ATMOSPHERE
1949	1996	1969

RMS HEIGHT ERRORS FROM THE TRIEXPONENTIAL MODEL
 BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	1685	1126	2100
FEB	1872	1590	2120
MAR	2312	2082	2521
APR	2236	1974	2472
MAY	1915	2109	1699
JUN	1605	1890	1257
JUL	1711	1966	1411
AUG	1673	1938	1359
SEP	1914	2020	1801
OCT	1947	1718	2151
NOV	2157	1555	2624
DEC	2195	1864	2477

RMS HEIGHT ERRORS FROM CLIMATOLOGY
 BY MONTH AND HOUR

MONTH	ALL	00Z	12Z
JAN	1702	1173	2101
FEB	1877	1603	2118
MAR	2354	2122	2564
APR	2295	2027	2537
MAY	2024	2248	1770
JUN	1650	2061	1094
JUL	1737	2123	1237
AUG	1628	2052	1051
SEP	2005	2166	1829
OCT	2045	1755	2299
NOV	2281	1610	2795
DEC	2172	1890	2418

Figure 40-1

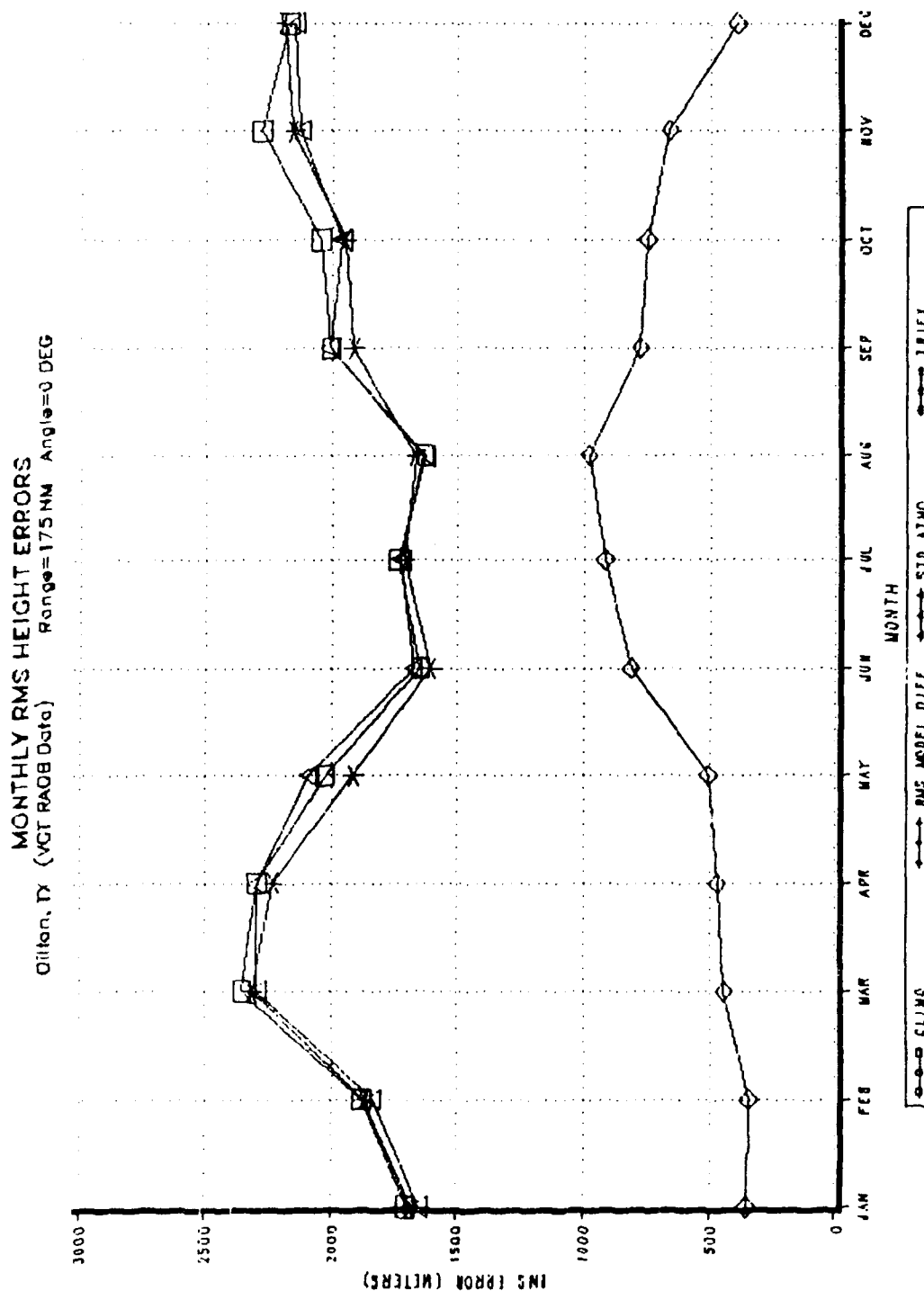


Figure 40-2

MONTHLY RMS HEIGHT ERRORS BY HOUR

Oilton, TX (VGT RAOB Data)
Range=173 NM Angle=0 DEG

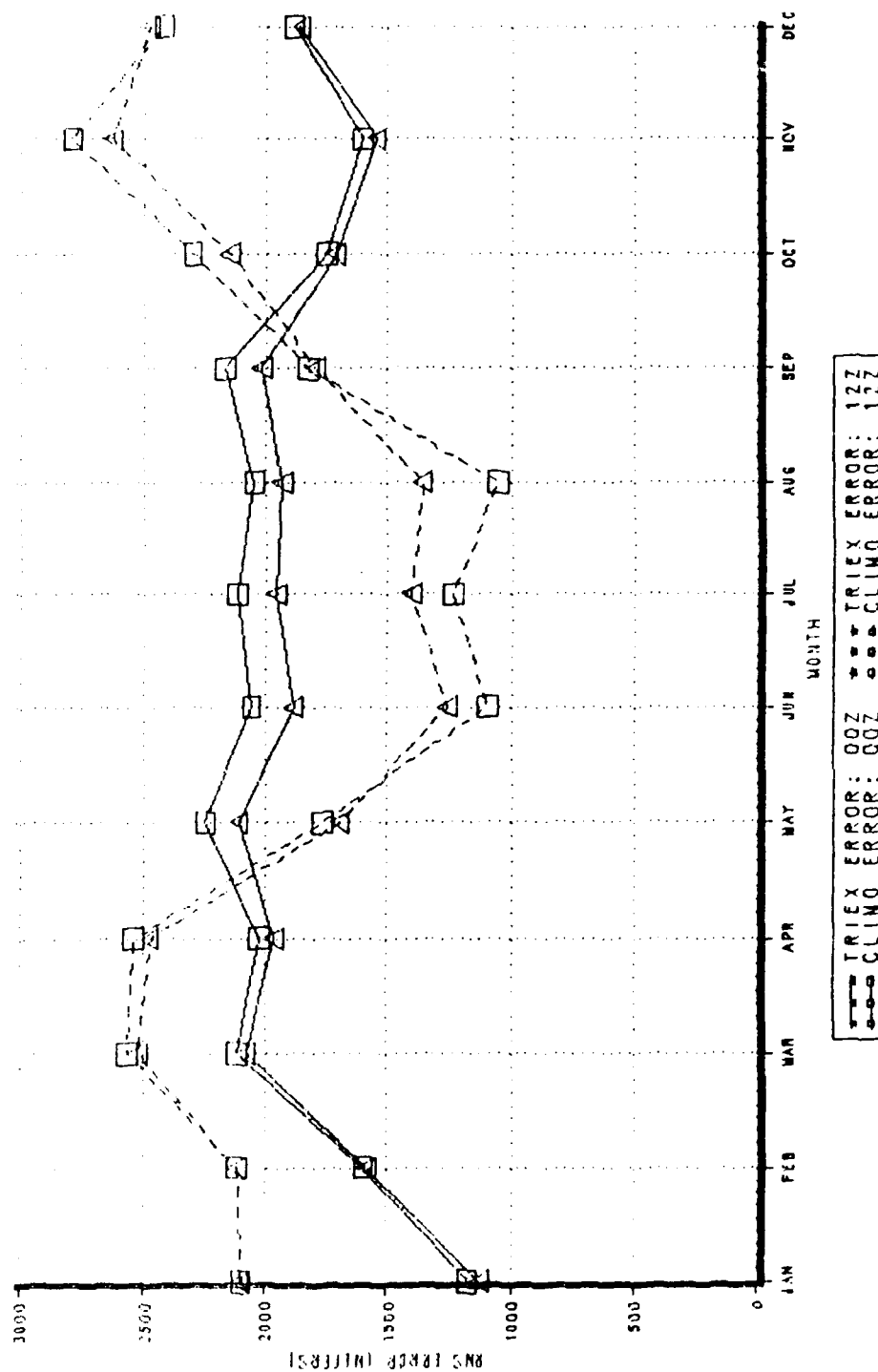


Figure 40-3

ERROR STATISTICS
Oilton, TX (VCT RAOB Data)
Range=175 NM Angle=0 DEG

MODEL	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
TRIEXPONENTIAL	216.92	1937.01	-3267.7	6668.0
CLIMATOLOGY	674.06	1879.17	-3799.4	6379.1
STANDARD ATMOSPHERE	574.97	1883.56	-3762.8	5962.1

Figure 40-4

TRIEXPONENTIAL MODEL ERRORS
Oilton, TX (VCT RAOB Data)
Range=175 NM Angle=0 DEG

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-3500	1	0.0	1	0.0
-3000	6	0.1	7	0.1
-2500	16	0.2	23	0.3
-2000	131	1.7	154	1.9
-1500	753	9.5	907	11.4
-1000	1430	18.0	2337	29.5
-500	1990	25.1	4327	54.6
0	1484	18.7	5811	73.3
500	688	8.7	6499	82.0
1000	327	4.1	6826	86.1
1500	157	2.0	6983	88.1
2000	81	1.0	7064	89.1
2500	63	0.8	7127	89.9
3000	30	0.4	7157	90.3
3500	26	0.3	7183	90.6
4000	23	0.3	7206	90.9
4500	28	0.4	7234	91.2
5000	169	2.1	7403	93.4
5500	161	2.0	7564	95.4
6000	254	3.2	7818	98.6
6500	110	1.4	7928	100.0

CLIMATOLOGY ERRORS

ERROR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-4000	1	0.0	1	0.0
-3500	2	0.0	3	0.0
-3000	4	0.1	7	0.1
-2500	8	0.1	15	0.2
-2000	23	0.3	38	0.5
-1500	107	1.3	145	1.8
-1000	549	6.9	694	8.8
-500	1786	22.5	2480	31.3
0	2084	26.3	4564	57.6
500	1333	16.8	5897	74.4
1000	667	8.4	6564	82.8
1500	282	3.6	6846	86.4
2000	146	1.8	6992	88.2
2500	104	1.3	7096	89.5
3000	48	0.6	7144	90.1
3500	27	0.3	7171	90.5
4000	24	0.3	7195	90.8
4500	19	0.2	7214	91.0
5000	4	0.1	7218	91.0
5500	25	0.3	7243	91.4
6000	559	7.1	7802	98.4
6500	126	1.6	7928	100.0

Figure 40-5

HEIGHT ERROR DISTRIBUTION Clinton, TX (VGT RADAR Data) Range=175 NM Angle=0 DEG

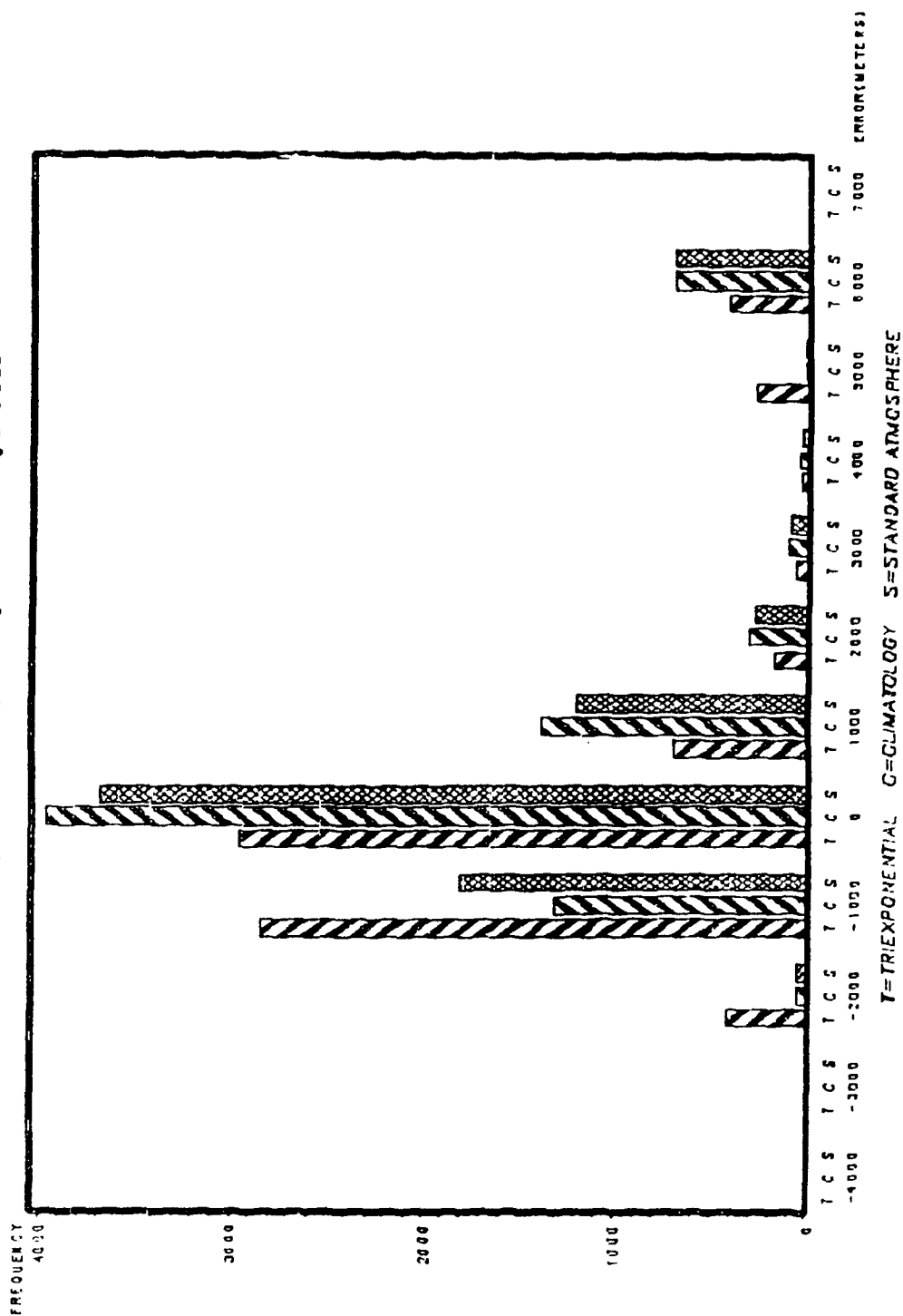


Figure 40-6

TRIEXPONENTIAL MODEL ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												Total
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
-3500	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	
-3000	0.00	0.00	0.00	0.00	0.00	0.31	0.00	0.15	0.00	0.30	0.16	0.00	
-2500	0.00	0.00	0.00	0.00	0.30	0.15	0.45	0.89	0.15	0.30	0.00	0.15	
-2000	0.29	0.16	0.00	0.31	0.45	3.54	3.87	5.19	3.66	1.49	0.47	0.30	
-1500	0.74	1.79	1.47	2.45	6.86	17.69	20.98	27.56	17.25	8.77	5.03	2.84	
-1000	10.03	7.34	7.05	11.47	20.12	26.92	31.40	26.81	27.48	20.95	15.72	10.60	
-500	33.19	30.34	29.07	28.44	27.27	21.69	20.54	18.81	17.71	22.88	26.10	25.37	
0	30.24	33.44	24.82	20.64	14.90	11.69	8.78	6.52	10.08	16.05	20.60	27.76	
500	10.32	8.97	12.92	12.23	11.48	6.15	2.83	4.30	4.58	9.51	9.75	11.04	
1000	4.57	3.92	4.41	6.42	4.62	3.08	2.23	2.07	4.58	5.05	4.72	3.88	
1500	1.77	2.28	2.35	2.60	0.45	0.92	1.19	1.19	2.44	2.23	2.99	3.43	
2000	1.62	1.14	1.62	0.46	0.89	1.23	0.60	0.30	0.76	1.04	1.10	1.49	
2500	0.15	1.14	1.32	0.46	1.34	0.46	0.15	0.00	1.07	1.49	1.57	0.45	
3000	0.29	0.65	0.44	0.31	0.60	0.15	0.00	0.00	0.61	0.55	0.16	0.75	
3500	0.44	0.49	0.59	0.31	0.15	0.00	0.15	0.59	0.15	0.30	0.31	0.45	
4000	0.29	0.33	0.88	0.31	0.30	0.00	0.15	0.15	0.31	0.30	0.31	0.15	
4500	0.00	0.49	0.44	0.61	0.30	0.31	0.15	0.30	1.07	0.45	0.16	0.00	
5000	0.00	0.00	0.29	1.83	4.47	4.00	4.32	4.15	4.27	1.19	0.63	0.30	
5500	0.00	1.47	2.64	4.28	4.77	1.38	2.08	1.04	2.75	1.49	1.26	1.19	
6000	3.39	3.10	5.73	5.20	0.75	0.15	0.15	0.00	1.07	5.35	7.55	6.12	
6500	2.65	2.94	3.96	1.68	0.00	0.00	0.00	0.00	0.00	0.30	1.42	3.73	
Total	678	613	681	654	671	650	672	675	655	673	636	670	7928

Figure 40-7

CLIMATOLOGY ERRORS BY MONTH
PERCENT FREQUENCY

TABLE OF ERROR BY MONTH

ERROR	MONTH												Total
Col Pct	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
-4000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	
-3500	0.00	0.00	0.00	0.00	0.00	0.31	0.00	0.00	0.00	0.00	0.00	0.00	
-3000	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.15	0.16	0.15	
-2500	0.15	0.16	0.00	0.00	0.15	0.00	0.30	0.30	0.00	0.00	0.00	0.15	
-2000	0.15	0.16	0.00	0.15	0.45	0.46	0.45	0.74	0.31	0.30	0.00	0.30	
-1500	0.15	0.49	0.88	1.38	1.49	1.85	1.64	2.96	1.98	1.34	0.47	1.49	
-1000	3.69	5.55	5.29	8.10	9.24	8.77	6.99	9.93	9.01	6.24	2.83	7.31	
-500	25.22	26.75	21.29	18.20	22.21	23.08	22.32	22.52	24.89	18.42	16.98	28.51	
0	34.51	32.30	23.49	22.94	24.14	24.77	29.46	26.67	24.12	23.77	25.79	23.73	
500	17.55	14.03	16.59	19.72	16.69	17.54	16.67	16.30	13.44	20.65	19.50	12.99	
1000	6.34	6.04	10.72	9.02	8.79	8.62	8.93	7.26	6.72	9.66	11.01	7.76	
1500	2.80	2.28	3.08	4.13	2.24	4.00	2.98	4.44	4.12	4.46	5.66	2.54	
2000	1.92	0.98	1.76	1.22	1.34	2.77	1.49	1.78	2.90	2.08	2.83	1.04	
2500	0.44	1.79	1.17	0.61	1.64	1.08	1.34	0.59	1.68	1.78	2.04	1.64	
3000	0.15	0.65	1.01	0.31	0.45	0.46	0.30	0.30	0.61	1.49	0.79	0.75	
3500	0.44	0.16	0.88	0.15	0.45	0.31	0.15	0.00	0.46	0.30	0.63	0.15	
4000	0.29	0.49	0.73	0.61	0.15	0.00	0.15	0.15	0.31	0.45	0.16	0.15	
4500	0.15	0.65	0.59	0.31	0.30	0.00	0.15	0.44	0.15	0.00	0.16	0.00	
5000	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.31	0.00	0.16	0.00	
5500	0.00	0.16	0.29	1.22	0.89	0.00	0.15	0.30	0.15	0.15	0.31	0.15	
6000	4.72	4.57	12.19	11.93	9.24	5.85	6.55	5.33	8.85	3.71	0.00	11.19	
6500	1.33	2.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.90	10.53	0.00	
Total	678	613	681	654	671	650	672	675	655	673	636	670	7928

Figure 40-8

HEIGHT DISTRIBUTION

Clinton, TX (VCT RAOB Data) Range = 175 NM Angle = 0 DEG

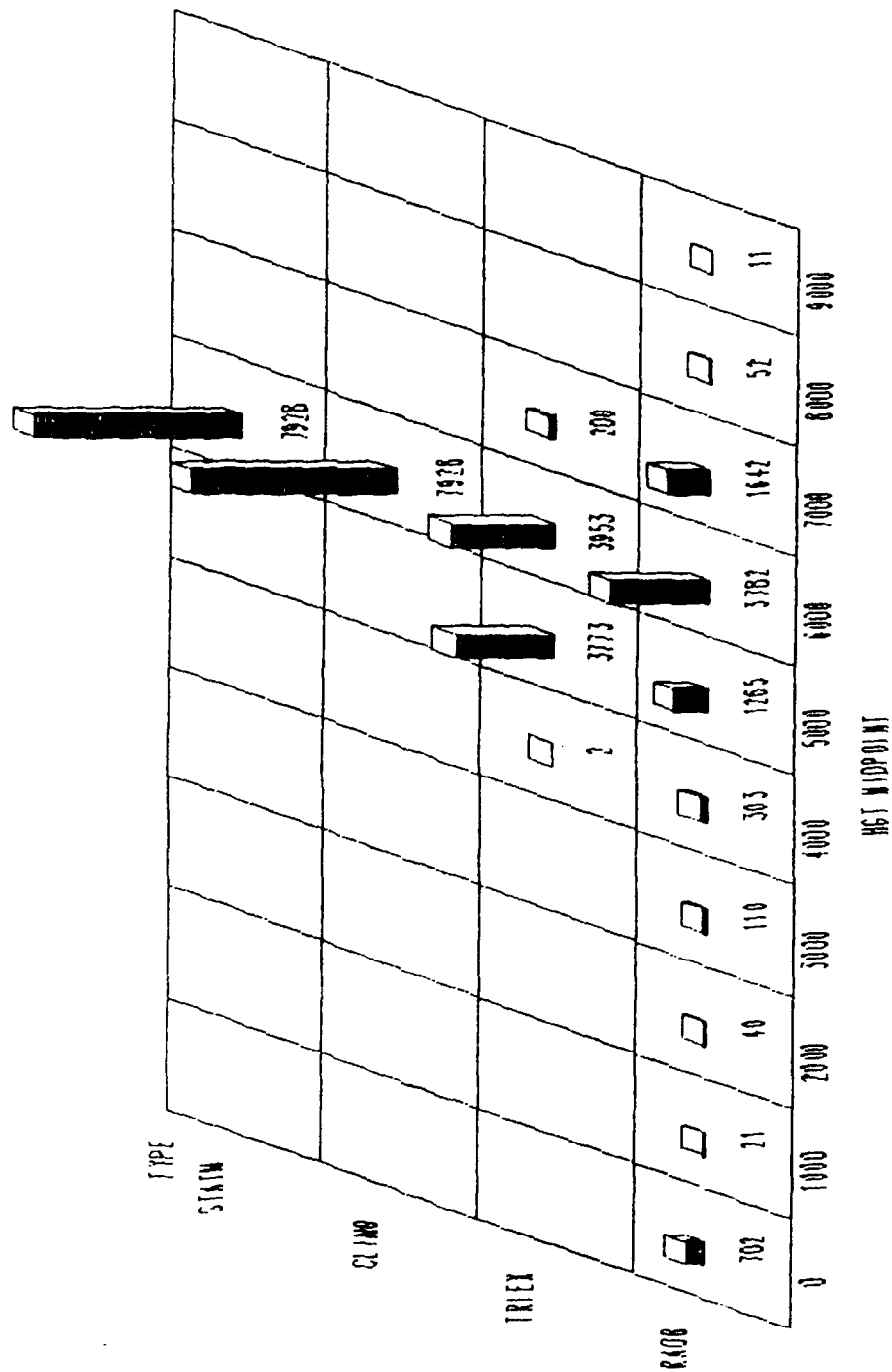


Figure 40-9

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